Goodnow's
HISTORY OF NURSING

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ELEVENTH EDITION

ILLUSTRATED WITH 292 FIGURES

Goodnow's

HISTORY OF NURSING

W. B. SAUNDERS COMPANY

PHILADELPHIA AND LONDON

Reprinted August, 1963

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Dedicated

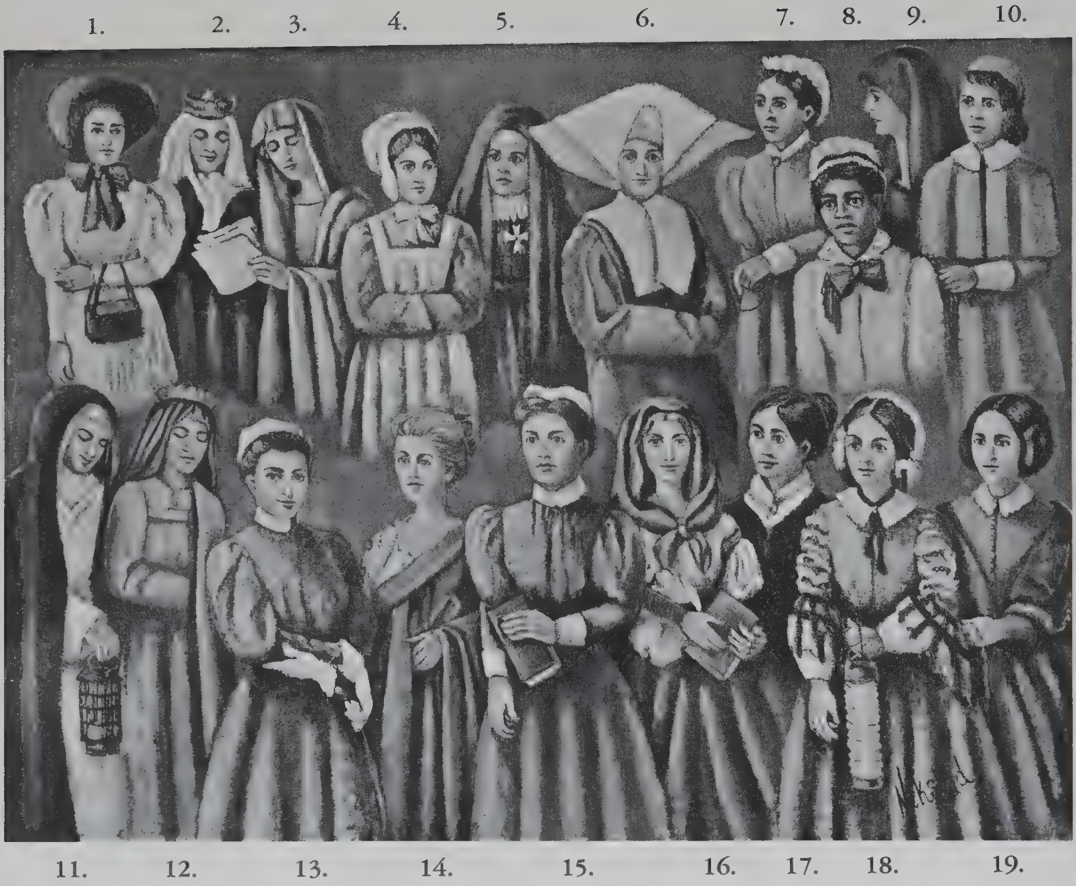
To My Loved Ones

FOREWORD

There is no more fascinating subject for study than the history of the care of the sick and the prevention of disease. From the magic of the witch doctor to the asepsis of modern surgery, from the blind and groping care of the cave mother for her child to the skill and knowledge of today's professional nurse, the centuries have seen progress and development almost beyond realization. The evolution of man's knowledge and social awareness has not been steady and consistent in every era. There have been dips and valleys in his long pilgrimage from superstition to scientific practice, from ignorance to enlightenment. But the over-all line of progression has been upward.

The history of this progression has for many years been clearly and concisely delineated by Miss Goodnow in her *Nursing History.* In the present revision of this text Miss Dolan has added much new material and a number of unusual illustrations which should be of especial interest. Miss Dolan has long devoted time, effort and scholarship to the study of nursing history. The breadth and depth of her research and the keenness of her interest have enriched her teaching in this field and have stimulated and inspired successive classes of students. This same awakening of interest should result from the reading and study of the present volume. No student in nursing who becomes truly familiar with the colorful history of her profession can fail to be enthralled by nursing's past, understanding of its present status and problems, and hopeful regarding its future.

CAROLYN LADD WIDMER



1. Lillian Wald 2. St. Elizabeth of Hungary 3. Phoebe 4. Deaconess of Kaiserswerth 5. Sister of the Knights Hospitallers of St. John 6. Sister of Charity of St. Vincent de Paul 7. Linda Richards 8. Mary Mahoney 9. St. Fabiola 10. Jeanne Mance 11. St. Catherine of Siena 12. St. Radegunde 13. Mary Adelaide Nutting 14. St. Marcella 15. Isabel Hampton Robb 16. St. Dymphna 17. Dorothea Lynde Dix 18. Florence Nightingale 19. Clara Barton

PREFACE

The eleventh edition of this textbook has been increased in scope, content, and method of presentation.

The first section of the book, namely the first seven chapters, has been revised with new and pertinent information. General historical background and contributions in the fields of medicine and biological science and their effect on nursing, which had not been presented in the previous editions of this text, have been integrated throughout this edition.

The material in several chapters has been rearranged into larger and more logical units in the hope of providing a clearer and more related concept of the period. There is an entirely new chapter, the one on the eighteenth century, for completeness in the development of nursing as it is related to the history of mankind.

Many new illustrations have been included. The selection of these wherever possible has consisted of well known masterpieces. Reproduced from an oil painting is a pictorial frontispiece depicting representatives in nursing from the first nurse leaders to those who molded the profession in the nineteenth century. These comprise military nursing, community nursing, nursing education, psychiatric nursing, nursing in communicable disease as well as hospital nursing service.

The original painting for the frontispiece is by Martha Nikstad, R.N., whose vocation is nursing and avocation art.

Ten of the new illustrations are from a continuing series, "A History of Medicine in Pictures." They are reproduced by special permission of Parke, Davis & Company, who commissioned the original oil paintings, and by whom they are copyrighted. The project is written and directed by George A. Bender; the paintings are by Robert A. Thom.

The Florence Nightingale lantern which appears on the cover is a replica of that used during the period of the Crimean War and is meant to be symbolic of the curative, teaching and preventive aspects of nursing.

To encourage the growth of the student of nursing in the knowledge of history, enrichment aids have been listed. These suggestions may motivate the student to participate more actively in the learning experience by using her communicative skills, creative expression, and diversional activities.

It is hoped that this book will increase the understanding of the social sciences, art and literature and will permit the student to see the correlation between these and the care of the sick.

Grateful appreciation is due to the many persons who have generously assisted in the location of material, and in reading, criticizing and preparing the manuscript for publication.

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INTRODUCTION

The professional nurse scrutinizes the patient's chart and listens to him and his family for a better understanding and appreciation of him as a person in order to provide satisfying, individualized nursing care. The student of history interested in the life of mankind searches nature's book of life and appraises the presentations of the archeologists, anthropologists, ethnologists and historians to assist in understanding the peoples who have preceded him and to whom he owes his cultural heritage.

Archeologists are still exhuming valid evidence of what the historians had envisioned and incorporated into their writings. The shadows of the great historical tapestry then take on color and depict the true significance of former people, scenes and events. Threads of history, religion, medicine, biological and social science are interwoven into an integrated whole and present the historical foundation of nursing.

It is only when we, the students of nursing, keep in mind the message of the "yesterdays" that we can evaluate our position "today" and find grounds for anticipating the "tomorrow."

I

Care of the Sick Among Primitive Man

> *Nursing as an art to be cultivated and a profession to be followed is modern; nursing as a practice originated in the dim past where some mother among the cave dwellers cooled the forehead of her sick child with water from the brook. . . .*
>
> *Sir William Osler*[1]

Let us travel to the end of the tapestry farthest removed from us and view the first scene in the history of mankind. The setting is a primitive one where families live in close proximity for protection. Community living is essential for survival. The period of this setting is timeless. It could be as ancient as the Paleolithic or Stone Age or as modern as the second half of the twentieth century. For some communities in today's world have not advanced beyond the Stone Age methods of living and of caring for the sick. The fight for life and survival has been carried on down through time.

Self preservation is an inborn tendency; to maintain life is an essential and constant struggle; thus "nursing" was found among the very earliest people. They provided the necessities of life by persistent effort and ingenuity, through trial and error. The crudest implements were used to obtain food, clothing and household needs. The wise woman selected such natural objects as seeds, nuts, leaves, roots, herbs, and bark from trees, and devised ways of extracting the medicinal ingredients from these raw materials. The woman became adept in the management of her home and family and added to her abilities in caring for the needy, the application of loving compassion and tender protection which were hers by native endowment.

From the time of the first *mother* down to the present day, we find women protecting children and caring for elderly and sick members of the family. They helped their neighbors during periods of illness. Simple procedures for the care of the sick were adopted; skills in practicing these remedies were improved; knowledge of the efficacy of these treatments spread from one community to another and was passed down from one generation to another. This furnished the basis for folk medicine which consists of tried and true remedies for curing minor ills and keeping people healthy. Dr. Jarvis in his recent best seller entitled *Folk Medicine* states that folk medicine reached far back in time and that nature opened the first drugstore. Such things as herbal teas and ointments were compounded from products of nature and recipes were treasured by families through the years.

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[1] Osler, William: *Aequanimitas.* Philadelphia, Blakiston Co., 1932, p. 156.

Anthropologists agree that the origin of folkways and mores is *social*. They evolved when people concerned themselves with the question of how to live. These customs differ according to times, places and people. The concept of the value of the individual and of the feeling of compassion for the less fortunate has not always been accepted. In some communities a nonproductive member or a physically handicapped or ill member was ejected from the group.

Ancient man lived in crude shelters and caves, killed in order to provide food for his family, fought his enemies with sticks and stones, and was not aware of the simplest hygienic precautions which are instinctive in animals. When he was injured and his blood was flowing, he soon learned to use pressure when putting a compress of cool water or mud over the injury. He observed how animals took care of certain ailments and followed their example, adapting these methods to his own needs and those of his family, for it was imperative to return to health and usefulness as soon as possible. As injured animals lick hurting parts of the body with rhythmic soft motions, so man rubbed an aching part of his own body.

Man learned slowly to comprehend nature and its processes. However, he was bewildered and baffled by sudden illness. If he were injured or attacked by an animal, he could see and connect the resultant injury with its cause. But the sudden ache inside his body, the paroxysms of sharp and throbbing pain, the inability to retain his food, the lack of sight, the muscular spasms, the loss of movement of one side of his body with concomitant loss of vocal expression were incomprehensible and were considered to be supernatural in cause. He blamed evil spirits or demons; there evolved the theory of *animism,* holding that the world swarmed with evil spirits which entered the body and were the causes of disease and death.

Robinson, in his book, *The Story of Medicine,* states that "Medicine is a natural art conceived in sympathy and born of necessity; from these instinctive procedures developed the specialized science that is practised today."[2] Sympathy and necessity were the motivating forces that impelled the person who came forward to answer cries of need. This person was called a *shaman.* The shaman, also referred to as the *medicine man* or *witch doctor,* assumed a solemn supervisory relation to disease and its cure. This forerunner of the modern doctor was called upon in critical emergencies to share his wisdom and skill in detecting the reason for the sickness; in prescribing a treatment; in performing surgery; or in conducting religious rituals to eject the evil spirits from the body of the patient. He was a man of mystery, a man apart from the group, one who had endured a long, toilsome and physically and mentally exhaustive course. He had mastered ventriloquism and magic tricks, had a comprehensive knowledge of herbs, and knew the precise details of ritualistic treatment.

The shaman handled disease almost en-

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[2] Robinson, Victor: *The Story of Medicine.* New York, Tudor Publishing Co., 1931, p. 1.

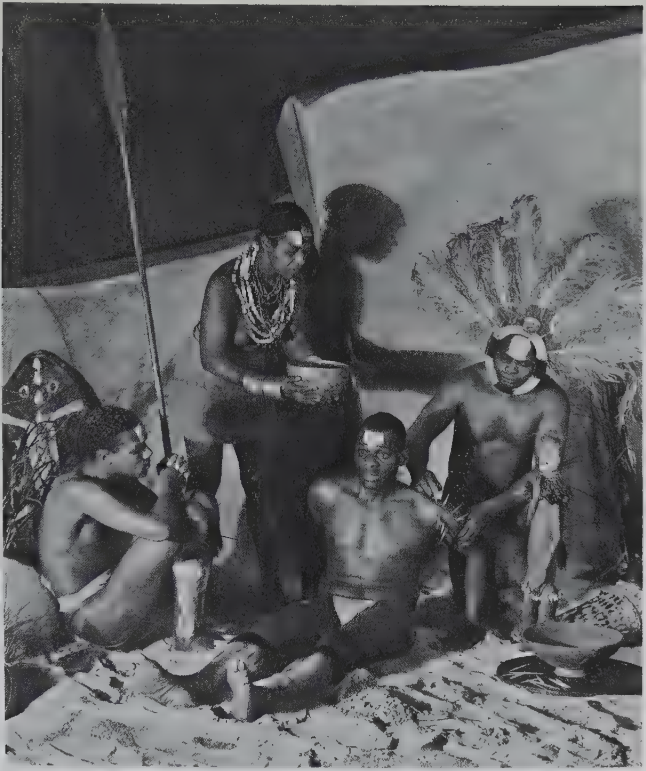

Figure 1. The shaman inserts thin, sharply pointed slivers of wood to close a wound. Then leaves are placed over this to serve as bandages. Note the wood carved figurine at the patient's side. (Courtesy of Davis & Geck.)

tirely through psychotherapeutic maneuvers. His chief objective was to frighten the evil spirit out of the body of the sick person. He did this by dressing himself in skins of animals and equipping himself with a large grotesque mask and some implement, such as a rattle or a drum, capable of creating an annoying noise. He mumbled incantations and spells of the type later immortalized by Tom Sawyer and Huckleberry Finn.

The medicine man's treatment might be summarized as follows:

Refuse the sick person rest and quiet to encourage the evil spirit to depart from the person's body by:

a. startling the evil spirit with a frightening mask, blood-curdling yells and deafening noises.
b. jolting the evil spirit by shaking, biting, pinching, kicking and pummeling the patient.
c. ferreting the evil spirit out with obnoxious odors.
d. driving out the evil spirit by giving the patient vile-tasting concoctions to drink. These included purgatives and emetics.
e. annoying the evil spirit by alternatively plunging the patient in baths of hot and cold water.

In addition to the scare techniques, mollifying acts were utilized, such as:

f. enticing the evil spirit to enter an animal (kept at the side of the sick person for that purpose) or an inanimate object, such as a clay or wax figurine.
g. pacifying the evil spirit by making sacrifices (usually animal).
h. placating the evil spirit by using *amulets*. These were articles which, when worn or carried, protected the wearer from evil influences, black magic, and disease.
i. resorting to objects with magical pow-

ers such as *fetishes.* The fetish was a primitive carved figure that was presumed to carry supernatural power. It was treated frequently as an idol and deified.

j. encouraging the evil spirit to come out of the body by chanting in rhythmic incantation.

This was the primitive form of shock therapy. The treatment appealed to all the senses.

When the evil spirit remained within the person and the symptoms had not subsided, the shaman resorted to an operation called *trepanation.*[3] Trepanning consisted of boring a hole into a person's skull by means of a sharp stone in order to permit the imprisoned devil, demon or evil spirit to escape. This was performed to relieve headaches, or to alleviate other conditions such as epilepsy. The patient did not always survive the treatment.

Primitive nursing and the care of the sick by the medicine man were *not* peculiar to the period in our past that we refer to as the Stone Age; it has persisted to the present day. Louise Stinetorf[4] in *White Witch Doctor* portrays a present-day interpretation of primitive nursing and care of the sick. One can picture the home-made implements and instruments as the author describes the use of splinters of bamboo or thorns as scalpels. Miss Stinetorf stresses the sparing use of pain-relievers and anesthetics:

> To the primitive mind all sickness is caused by devils and no devil leaves such a nice comfortable abode as a human body willingly. It fights to the last against being evicted. Such a titanic struggle is bound to rip a man to pieces inside and hurt him exceedingly. The bigger and stronger the devil, the worse the struggle to get him out, and consequently the greater the pain, the prouder the person is after it is all over.

Miss Stinetorf indicates that vile-tasting and unpalatable medications seemed to be received with greater appreciation by the

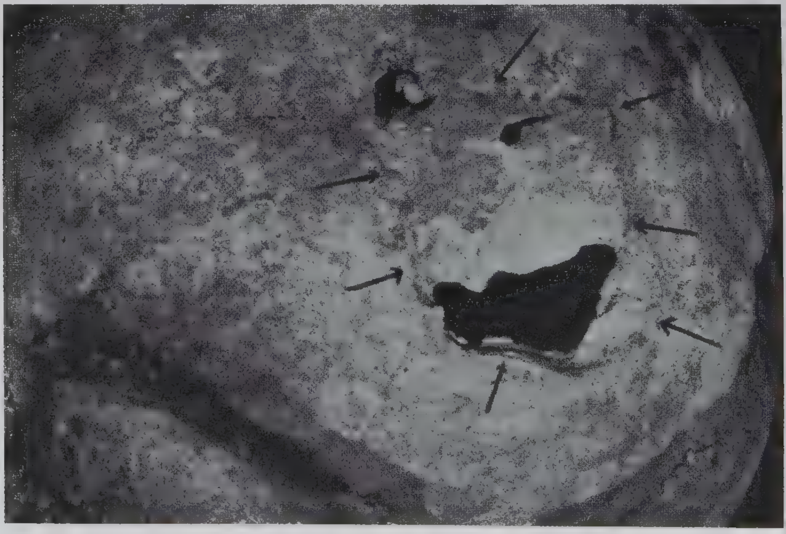

Figure 2. A trepanned skull from eastern Arkansas. Arrows indicate original extent of operation. Healing process can be seen.

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[3] "Trepanation, the making of an opening in the skull with sharpened flint or shark's tooth, is now considered an obsolescent term; the modern surgeon prefers the term trephining, the cutting out of a cranial disk. The object of trepanation was to give the demon confined within the skull a chance to escape; the object of trephination is to remove intracranial pressure. Since trephining stems directly from trepanning, and the ancient and modern operations are fundamentally identical, medical historians cling to the elder word." Robinson, Victor: "Trepanation after Lister." *Ciba Symposia, 1:*192, 1939.

[4] Stinetorf, Louise: *White Witch Doctor.* Philadelphia, Westminster Press, 1950, pp. 70–71.

patient and greater faith was placed in their efficacy.

At one time, Miss Stinetorf developed malaria. After she recovered, she was informed that her native attendants had debated the merits of performing a trepanning operation on her:

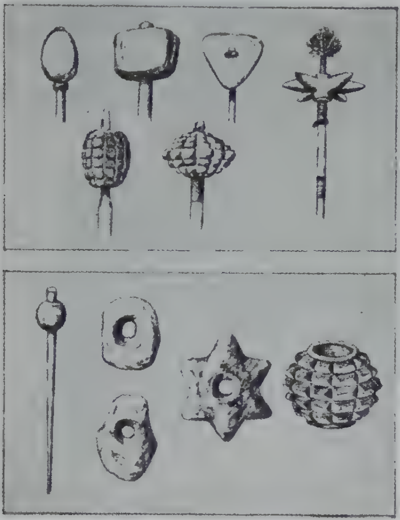

Figure 3. Stone mace-heads from the South Seas (above) and from America (below), used in connection with trepanation.

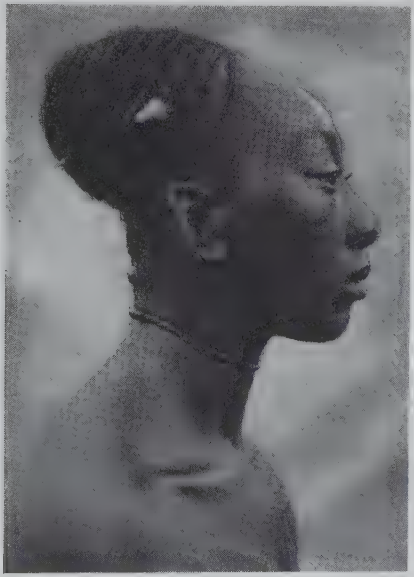

Figure 4. Deformation of head and scarification of chest of present-day Mangbetu woman of the Congo. (Courtesy of American Museum of Natural History, New York.)

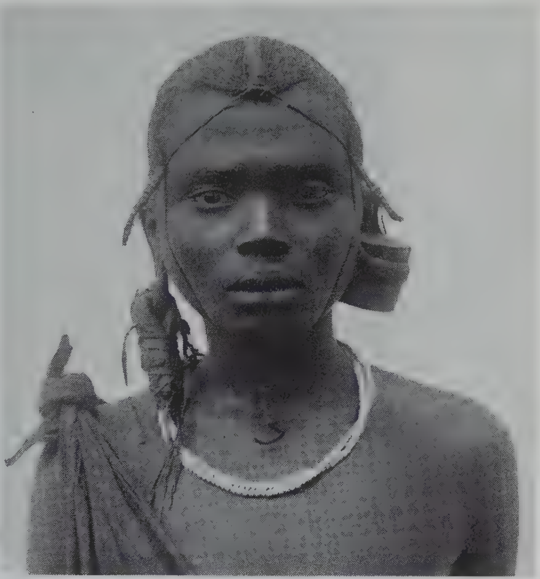

Figure 5. Distortion of ear lobes of woman from Africa. (Courtesy American Museum of Natural History, New York.)

> We knew that the spirits of the Great Mother Forest were calling to you, and we debated among ourselves as to whether or not we should break open your skull and set your spirit free so that it might answer them.[5]

An interesting comparison of the professionally prepared person versus the medicine man is presented by Miss Stinetorf:

> Natives say medical practices are superior to those of the ordinary witch doctor. Fewer of the patients die, fewer of those who live are deformed, all of them suffer less from the treatments, and it is pleasant not to be afraid of him as a person.[6]

In primitive communities many of the culturally approved mutilations were detrimental and injurious to health. These included deformation of the head and feet, application of bands of metal to stretch the neck, and the insertion of pieces of wood, ivory and metal into delicate tissue which distorted the shape of the tissue. The practice of cutting the skin and either burning

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[5] *Ibid.*, p. 183.

[6] *Ibid.*, p. 176.

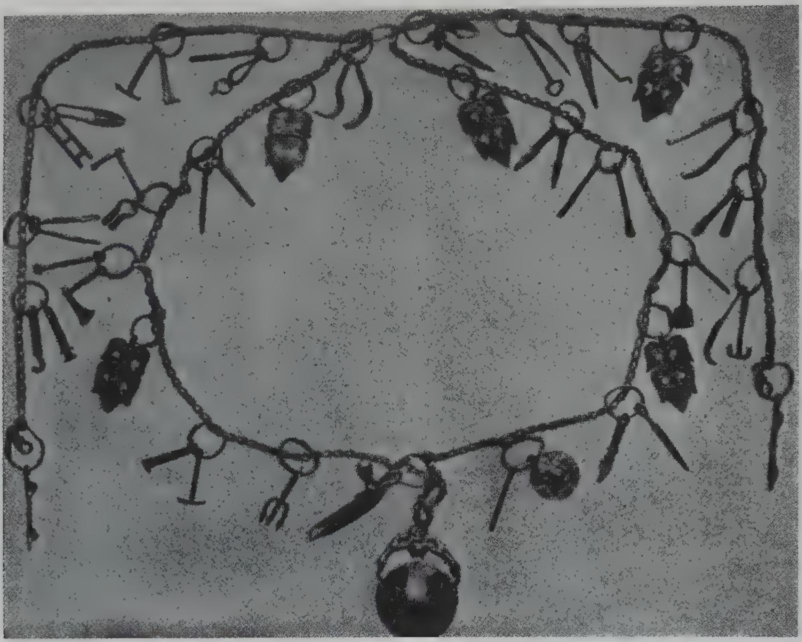

Figure 6. A charm bracelet of the fourth century A.D.

names or rubbing ashes into the scarification has been revived in our own day.

When we ponder the beliefs, customs and rituals employed in the care of the sick and in the preservation of health in the primitive communities, we find evidences of their presence today. From the earliest families, primitive and highly civilized, to the families of today, primitive as well as highly educated, we note the use of superstitious practices. Such practices involve still the use of the *fetish, amulet, talisman* and *charm*. The fetish was a primitive carved figure that was presumed to carry supernatural power. It was treated frequently as an idol and deified. Our present-day amulets include horse chestnuts carried to ward off rheumatism, a bag of camphor worn around the neck to prevent influenza; other examples of amulets are horseshoes, rabbits' feet, four-leaf clovers, and charm bracelets. The carrying of charms and amulets counteracts the undesirable effects of such things as black cats, broken mirrors, walking under ladders, Friday the thirteenth and hexes, and also the "evil eye" influence. The "evil eye" is an ancient superstition which concerns the power of one person to harm another person by a glance. Children are thought to be particularly susceptible to the "evil eye."

Indeed, Robinson is correct when he states, "Intellectually we are but a stone's throw from the Stone Age; and emotionally we are still living there."[7]

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[7] *Op. cit.*, p. 10.

Aids to Enrich an Understanding of This Period

I. Visit a museum containing an exhibit of Stone Age culture and life in primitive communities.

II. Construct a diorama of the care of sick in a primitive setting.
III. Utilize a hobby of stamp collecting and assemble specimens depicting customs and practices in a primitive society.

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II

Care of the Sick in Ancient Cultures

The care of the sick in primitive groups was the first scene in the theater of life, but we are aware that ancient cultured groups existed side by side with the primitive ones just as they do today. To assist in studying the contributions of the ancient cultures, let us turn our attention to Biblical presentations and archeological findings.

A complete setting for the first glimpse of man and his progress down through the centuries should begin with the creation of the world in which man was to live.

Man and the universe were made to exist in the profound execution of the plan of Creation. This awe-inspiring fact continues to mystify humanity, but its reality is witness to the fact. The Bible related: "The heavens show forth the glory of God, and the firmament declareth the work of His hands."[1]

The immensity of His creation is in evidence around us. Our generation is fascinated by the study of outer space and our relations with other planets. We know that the sun is the center of the solar system and that the closest planet to it is Mercury, 36 million miles away; then Venus, which is 67 million miles; then the earth at 93 million; Mars at 141 million; and so on out to Pluto, which is 3 billion 380 million miles from the sun. One cannot but marvel at the immensity of the universe.

The plan of the universe involves many astounding factors, one of which is motion. The planets are moving at fantastic speeds in different orbits, in various directions as they follow their prescribed course in the heavens. Yet in the thousands of years that they have been moving smoothly though speedily in different directions, they have not collided. Nor is there evidence of wearing out. The sun has not needed to have a recharging of its batteries nor has it blown a fuse.

The wonders of the universe are apparent but so are the wonders of man. The Biblical scholars have indicated that in the Garden of Eden God had given man a perfect body—free from sickness, infirmities and old age—an immortal soul, and a share in God's life. After the first couple had given in to temptation and were guilty of disobedience, punishment followed. This involved removal of the perfection from each body, leaving the mind darkened and the will weakened; the consequent result was sickness, suffering, old age and physical death, removal of the share of God's life in heaven with deportation and loss of citizenship. A Redeemer was promised.

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[1] Psalm 18:2.

There is no exact date of the beginnings of human history. It is curious how small a portion of the habitable globe was the site of all those human activities the record of which constitutes ancient history.

For centuries Egypt had been considered the true cradle of culture until energetic and curious archeologists in the 1840's began excavating the mounds of dirt in Mesopotamia. In these folds of earth were buried important treasures. What was found in this fertile strip of land between the Tigris and the Euphrates rivers has established Mesopotamia as the cradle of civilization. These findings have corroborated Biblical records of the fact that several cultures had flourished in this land between the two rivers. These people left records on sun-dried *clay tablets* (used because of the absence of stone in this area) and evidence that they were a highly skilled, aesthetically superior group of people.

OLDEST CULTURE—SUMERIAN

In his book *Gods, Graves and Scholars* Ceram[2] tells us that the discovery of the existence of the Sumerian race evolved when cryptologists worked on deciphering cuneiform script. It was assumed very early that the cuneiform script had been developed probably by a non-Semitic people from the eastern highlands—the Sumerians. When the Sumerians moved into the land between the Tigris and Euphrates, they had devised not only this system of writing but also a set of laws and a mature culture. Their inscriptions have made it possible to trace the history of the Mesopotamian world back to the dawn of history. It seemed as if the beginnings of the Sumerian culture coincided with times described in Genesis. It was surmised further from archeological excavations that the Sumerians might be the same people who populated the earth after the punitive deluge described in Scripture.

An excellent example of one obedient man is seen in the story of Noah, who, despite the criticisms of his neighbors, built the Ark which he had been divinely inspired to construct. Thus Noah was prepared for the sudden catastrophic flood and subsequently landed on Mount Ararat, 500 miles from his home.

Reports of this deluge by which a large part of the race of man was swept from the earth have been recorded in many countries of the period. Impact of the story of the Flood may be gauged by the fact that as early as the second millennium B.C. it was known in at least four languages. Its influence on art and thought spread to many lands and cultures. Archeologists Layard and, later, Smith excavated at Nineveh clay tablets that describe this punitive deluge. In 1929 Woolley commenced his excavations in the Biblical Ur of Chaldea, home of Abraham, on the Euphrates. His archeological expedition was most fruitful and he exposed alluvial deposits explained by geologists to have been due to a tremendous flood that inundated completely the land later inhabited by the Sumerians.

Among the Sumerian possessions that Woolley unearthed were examples of their daily living, of the beautiful things they cherished, of the evidence of skilled crafts-

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[2] Ceram, C. W.: *Gods, Graves and Scholars.* New York, Alfred A. Knopf, 1952, p. 300.

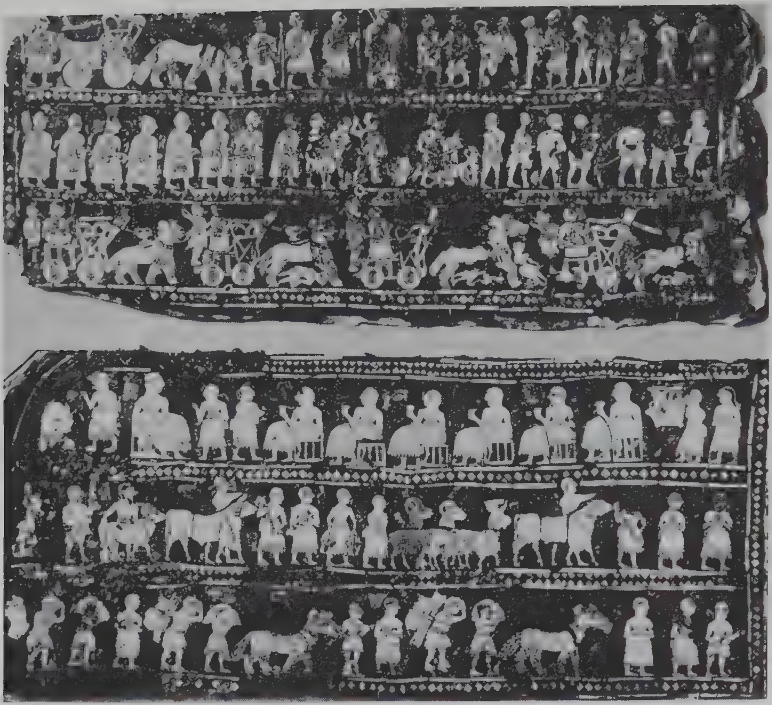

Figure 7. The *Standard of Ur* depicts scenes from life in Ur *ca.* 4000 B.C. (Courtesy of the University Museum, Philadelphia.)

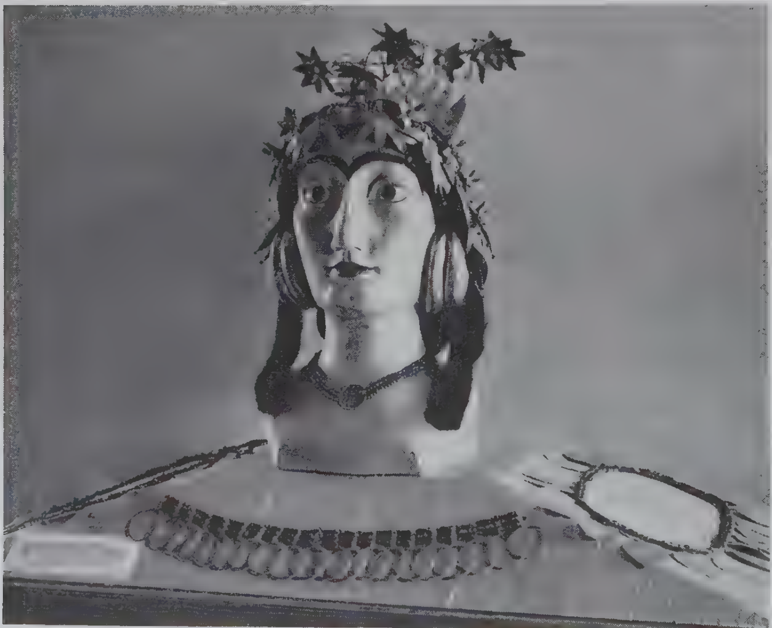

Figure 8. Woman's headdress from the Great Death Pit in Ur. (Courtesy of the University Museum, Philadelphia.)

men, of their medical skill, and of their burial customs which shed light on the value of the individual of five thousand years ago.

The Standard of Ur—a panel of lapis lazuli (sapphire blue mineral) with a mosaic of figures in mother of pearl—presents a photograph of life in Ur *ca.* 4000 B.C. Upon scrutinizing this panel, one notes the custom of sacrificing animals, the presence of chained prisoners, and the use of chariots for warring. The excavation of the grave of Queen Shub-ad unearthed a rich array of funereal gifts made of gold, silver and copper; the queen's headdress and jewels were exquisite.[3] These graves belonged to people who lived after the deluge because, as has been stated previously, the remarkable alluvial deposits beneath them are believed to be the result of the historic punitive flood of the Old Testament.

A reader feels as though he were an eyewitness as he reads Ceram's account[4] of the excavations of these graves. Outright murder occurred at the burial of the Queen; all of her ladies-in-waiting, servants, soldiers

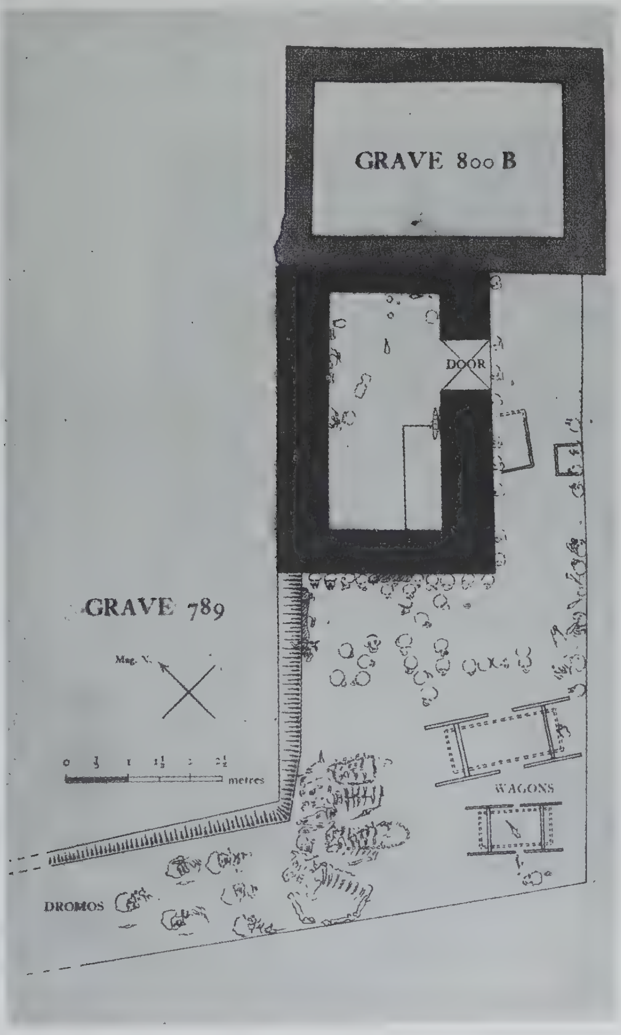

Figure 9. Scene from the Great Death Pit in Ur with the bodies of the human victims, wagons and animals shown in position. (Courtesy of The University Museum, Philadelphia.)

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[3] These are now at the Museum of the University of Pennsylvania in Philadelphia.

[4] *Op. cit.*, p. 311.

and her court harpist were murdered while standing in position at her bier so that they might accompany the Queen in death. The scene is an example of planned, compulsory human sacrifice. Probably a soporific assisted in achieving a painless suffocation.

As the concept of animism became an accepted one, man attempted to placate and to worship evil spirits as gods. He built *temples* to them hoping to please them so that disease and misfortune would be eradicated. With this movement the medicine man became a *priest-physician* who worked in the temple.

The world's oldest known medical prescriptions, scratched on a 4000-year-old clay tablet, were translated in 1953. The ancient physician wrote on both sides of the tablet with a reed stylus sharpened to a wedge-shaped edge. Unfortunately, the tablets do not contain the names of the disease for which the remedies were prescribed. The translators of the cuneiform script on the clay tablets report that it was unusual that the ancient doctor did not resort to magic spells or incantations. It is quite remarkable that this oldest page in medical history yet discovered is so completely free from magical elements, when we realize that incantation to the gods was very much a part of the Babylonian medicine of a later day.

After several centuries the Sumerians were eradicated eventually, and the culture of Babylonia began to flourish. In both these periods, medical progress did not parallel social progress.

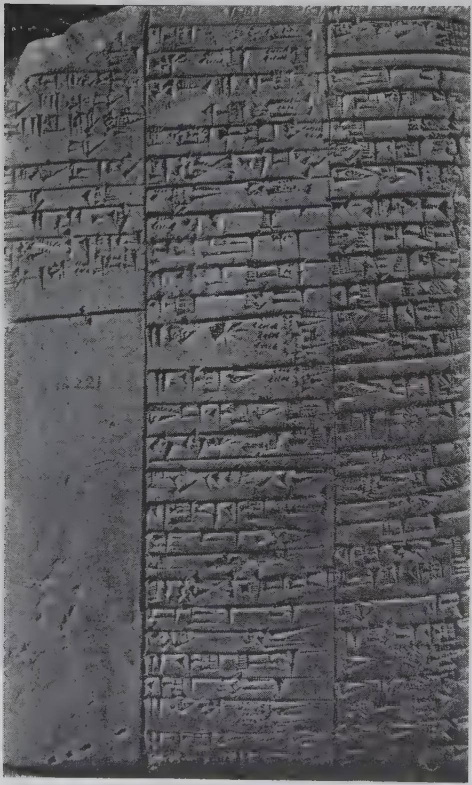

Figure 10. The oldest known medical prescriptions written in cuneiform script on clay tablet. This specimen is in the University Museum of the University of Pennsylvania, Philadelphia.

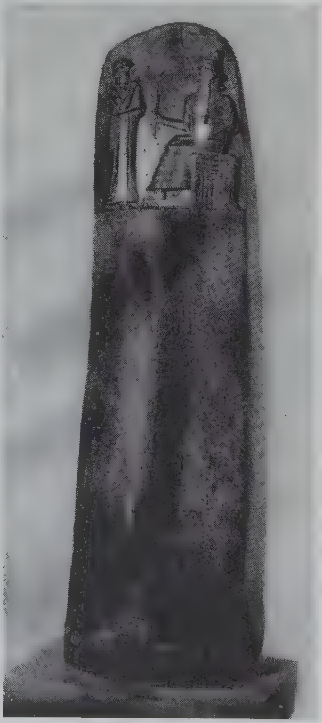

Figure 11. Stele of Hammurabi which is exhibited at the Louvre in Paris. Hammurabi is receiving the laws from the sun god. Below is the code in cuneiform. (From cast at Oriental Institute Museum. Courtesy of Oriental Institute, University of Chicago.)

THE BABYLONIAN CULTURE

Babylon, ancient city of Mesopotamia in 3000 B.C., was the center of the empire of Babylonia. The city appeared in the focus of history after the fall of Sumer and the rise of the Semitic states with the triumph of Sargon. Under Hammurabi, ca. 2000 B.C., Babylon became an important city and the capital of the kingdom. The Babylonians had derived cuneiform writing from the Sumerians. Their society was divided into a quasi-feudal type with the upper stratum made up of wealthy landowners, merchants and priests; the middle class consisted of less wealthy merchants, peasants and artisans; the lowest class was comprised of slaves. The religion of the Babylonians centered around the worship of Marduk, who was also called Bal, Baal, or Baalzebub. Marduk was described as a cruel god who exacted human blood, frequently children's, in return for his favor. The temple priests were made eunuchs. Handicapped members of society were used as sacrificial victims. The poor were threatened with brutal punishment for the smallest offenses; occasionally the punishment meted out to them was to be dismembered on the altar of Baal.

Hammurabi, the king of Babylonia, has been remembered for his *Code of Law,* a compilation of the oldest preserved codes of ancient law. The Code of Law was somewhat humanitarian and tried to prevent the defrauding of the helpless and to reduce the cost of medical care. Fees to be charged to a "gentleman" and those to a "slave" were presented clearly:

> If a doctor has treated a man for a severe wound with a lancet of bronze and has cured the man, or has opened a tumour with a bronze lancet and has cured the man's eye, he shall receive ten shekels of silver.
>
> If it was a freedman, he shall receive five shekels of silver.
>
> If it was a man's slave, the owner of the slave shall give the doctor two shekels of silver.

The startling aspect of the Code was that the governing body replaced the individual as the avenger of injustice. The penalties were severe and resulted frequently in cruel physical punishment. Doctors were responsible to the govern-

Figure 12. The Code of Hammurabi. © 1957 by Parke, Davis & Co.

ment; in fact, the Code of Hammurabi regulated the physician's conduct:

> If a physician has treated a free-born man for a severe wound with a lancet of bronze and has caused the man to die, or has opened a tumour of the man with a lancet of bronze and has destroyed his eye, his hands one shall cut off.

One is impressed with this undesirable aspect of the Code; the retributive nature of the punishment follows literally "an eye for an eye."

Abraham, a descendant of Noah, was a contemporary of Hammurabi and grew up in Ur of Chaldea, a Babylonian city. It is remembered that Abraham's love of God and His teachings were not shared by his neighbors who were devoted passionately to trade and pleasure. At this time, the poor were forced to work under the whips of overseers while the rich enjoyed luxurious living. By divine revelation, Abraham was urged to go to Egypt with his wife and his nephew Lot and Lot's wife. During their trip the destruction of the wicked cities of Sodom and Gomorrah occurred like volcanic eruptions, and Lot's wife was punished for her disobedience and curiosity. The Bible presents these happenings very vividly. Blocks of salt from this area can be viewed in the Semitic Museum of Harvard University.

Babylon was destroyed by the Assyrians under Sennacherib and its real splendor belongs to the later period of Babylonia, after the city was rebuilt. The brilliant color and luxury of Babylon became famous during the rule of *Nebuchadnezzar* (ca. 605–562 B.C.). He was responsible for the

Figure 13. The Hanging Gardens of Babylon containing the famous medicinal herb gardens. (Brown Brothers.)

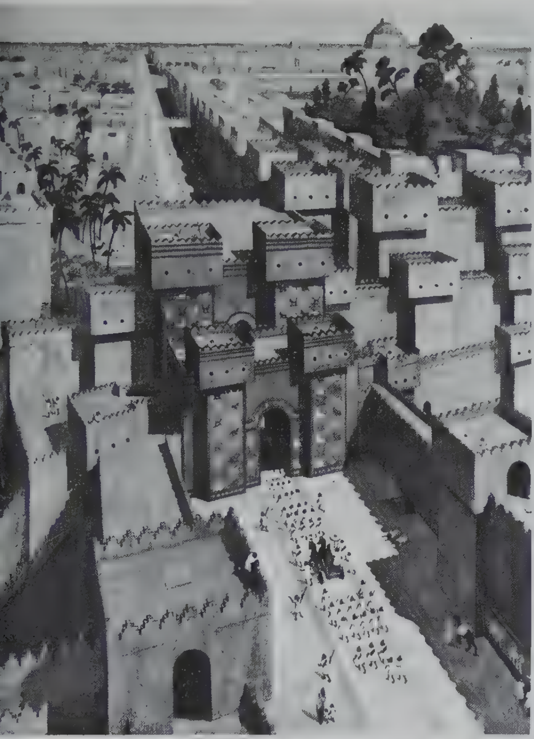

Figure 14. The famous Procession Street of Babylon in the days of Nebuchadnezzar. (Courtesy of the Oriental Institute, the University of Chicago.)

construction of the Hanging Gardens of Babylon, one of the seven wonders of the world and a most outstanding architectural achievement. A continuous supply of water was furnished by a chain pump that forced the water through the arches and thereby irrigated the famous medicinal herb gardens.

Another notable historic event occurred in the construction of the *Tower of Babel.* This edifice was erected to glorify the idol among the gods, Marduk. During the construction of this tower there was a confusion of tongues which terminated the project. In 1898 Koldeway, an archeologist, began an excavation of Babylon and unearthed evidence of the Tower of Babel, the Hanging Gardens and the Procession Street.

The Procession Street was a magnificent thoroughfare built to accommodate processions in honor of Marduk. This sacred street of Babylon was approximately 74 feet wide and extended from the outer city walls to the Gate of Ishtar. The walls surrounding the thoroughfare were constructed of brightly glazed or enameled brickwork in a deep, rich blue and were decorated with lions, dragons and bulls.

It was during the reign of Nebuchadnezzar that Jerusalem was annihilated; this event as well as the destruction of Solomon's Temple had been foretold. Israelite captives were brought to Babylon and Daniel was one of them. He, with Shadrach, Meshach and Abednego refused to worship Baal. The three youths preferred the fiery furnace and Daniel, the lion's den to the worship of a false god.

The grandson of Nebuchadnezzar, Belshazzar, gave a lavish banquet for a thousand guests. At this orgy the golden and silver vessels taken from Solomon's Temple were desecrated. During the revelry, handwriting appeared on the wall. The ghostly hand wrote words which could not be translated by the Babylonian soothsayers. Daniel interpreted them thus: "God has numbered your kingdom and has finished it; you have been weighed in the balance and have been found wanting; your kingdom shall fall to your enemies, the Medes and Persians."

History reveals that Daniel's prophesy was affirmed. That same night Belshazzar was slain, and the Persian leader, Darius, conquered Babylon.

Medical treatment in Babylonia was primitive. The Babylonians inaugurated a quaint custom of bringing the sick person out into the busy market place. Here, all who passed inquired about the disease and if the passerby or a relative or friend had similar symptoms, he prescribed a cure. Thus were the diagnosis and treatment handled. Principal methods of treatment consisted of ridding the human body of the

Figure 15. Belshazzar's Feast.

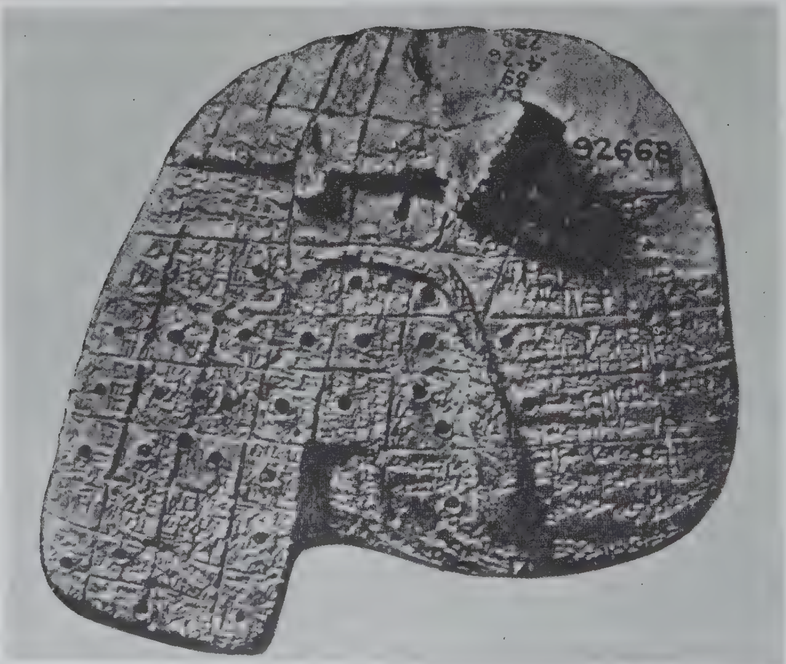

Figure 16. Clay model of sheep's liver (Babylonian, *ca.* 2000 B.C.).

demons of disease by incantations and by the application of certain herbs. Ancient Babylonian medical texts recorded on clay tablets presented first a description of the symptoms of the disease, followed by the prescription and directions for compounding the medicine, and finally an incantation to the gods. An animal was kept at the side of the patient in the hope that the demons would take up their abode within its body; then the animal was sacrificed. It has been mentioned that sacrifices to the gods were frequent and often cruel; human beings were offered on occasion. Prognosis or the outcome of the disease was controlled by the art or practice of divination. This was carried out by *hepatoscopy,* or the inspection of the liver of sacrificial animals. From hepatoscopy the Babylonians learned the structure of the liver and the gallbladder, and their clay models are excellent anatomical specimens.

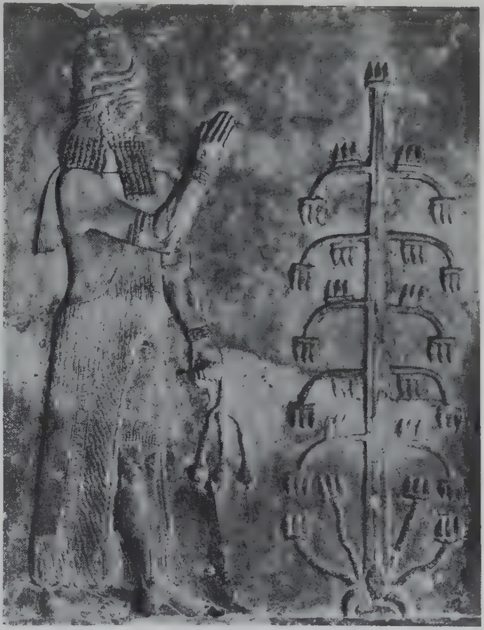

Figure 17. Assyrian priest with poppies. (Courtesy of *What's New.*)

THE ASSYRIANS

The land of Assyria was situated, for the most part, on the left bank of the Tigris. It was colonized by a Semitic race from Babylonia and, but for slight differences of dialect, these people spoke the same language as the Semitic-Babylonians.

The Assyrian Empire was one of the most powerful, reaching out and encompassing wider and wider territories, its major objective being conquest. Its capital, Nineveh, was for centuries the metropolis of the world. But at the very peak of its conquering glory the city was struck down and annihilated. In the seventh century B.C. Nineveh was the boasted mistress of the world; two centuries later her ruins lay buried beneath mounds of earth.

Nineveh has impressed itself on the memory of mankind by examples of murder, plunder, suppression and violation of the weak, by war and all manner of physical violence, and by the deeds of a ruthless dynasty of rulers who subjugated the people by terror.

One of the rulers, Sennacherib, warred constantly and was defeated at Jerusalem. As Isaiah prophesied:

> Therefore thus saith the Lord concerning the king of Assyria, he shall not come into this city, nor shoot an arrow there, nor come before it with shields, nor cast a bank against it. . . . Then the angel of the Lord went forth and smote in the camp of the Assyrians a hundred and four score and five thousand: and when they arose early in the morning, behold, they were all dead corpses.

The limits of tyrannical brutality that Sennacherib reached were shown in the description of his destruction of Babylon. His career and the records of Assyrian life have been recorded in his library of nearly thirty thousand cuneiform tablets unearthed by the archeologist Layard during his excavation in 1845. This library of clay tablets has been considered one of the most important historical sources of antiquity. The keys that helped to unlock the secrets of the mysterious writing of the cuneiform

Figure 18. Winged bull excavated from Assyrian palace. (Courtesy of Oriental Institute of University of Chicago.)

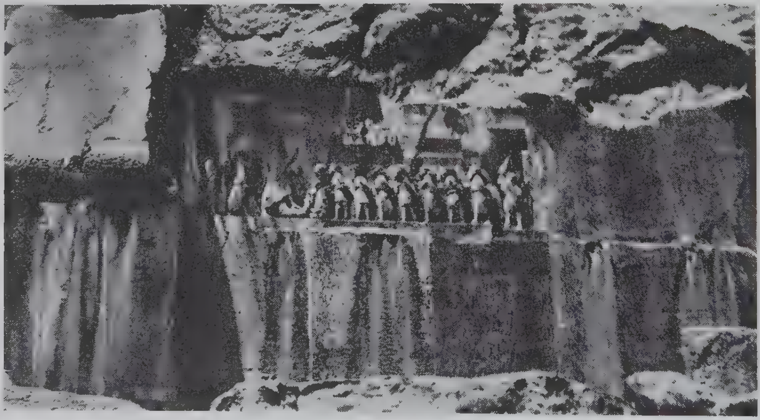

Figure 19. Rock inscription (Babylonian, Old Persian and Elamite) and sculpture of Darius I at Behistun, Iran. (Courtesy of Oriental Institute of University of Chicago.)

script came in the form of inscriptions on rocks in Persia. A Persian, King Darius I, who was at the height of his power about 550 B.C., conquered many peoples including the Babylonians. (The ruins of Persepolis revealed his luxurious palace which was destroyed by Alexander the Great.) The achievements of Darius were recorded on rocks in three different inscriptions—Babylonian, Old Persian and Elamite.

There has been no evidence of medical progress in this territory dominated by a sanguinary group of people totally disinterested in the value of human life. That mental, emotional and physical illness prevailed at this time is assumed.

THE PERSIANS

The Persians were a group of Iranian tribes, which Cyrus the ruler (553–529

B.C.) welded into a nation. He defeated the Median king and became leader of the Medes and Persians. The conquests of Cyrus increased and extended from Egypt to the borders of India due to the leadership of Darius the Great.

The religion of the Persians centered around the teachings of the prophet Zoroaster who preached that Ahura Mazda was a god of light and goodness and opposed to the forces of darkness and evil. Zoroastrianism is still practiced in Iran and in India by the Parsees, who are descendants of the Persians.

The oldest medical records of the Persians are found in the few surviving books of Zoroaster. Many of the ideas about medicine and sanitation were adopted from their neighbors. It is clear that belief in the demonic theory of disease was practiced. The most reliable cure was the recital of invocations for spiritual assistance.

The Zoroastrian bible, the Avesta, contained the ceremonial rules relating to the natural laws of birth and death. One of these concerned itself with abortion. To destroy life was to destroy the highest form of creation, and the punishment was the same as for murder.

Principles of public health and sanitation were stressed in Zoroastrian medical laws and practices. For instance, in order not to contaminate earth or water, after a person's death his body was fastened to the roof of a special high tower called "Tower of Silence." Birds picked the bones, which dried out and then dropped down into the pit below, and in this way decomposition was prevented. Anything that had become contaminated was purified by being washed with bull urine.

The Persians, who regarded music as an expression of the good will of Ahura Mazda, were said to have cured various illnesses by the sound of the lute.

Three types of practitioners emerged from the medical centers: those who healed with the knife, those who healed with herbs, and those who healed with holy words. The latter had the most prestige, and the surgeons had the least.

Rules were established to test the skill of candidates before they were permitted to practice. The surgeon had to perform his

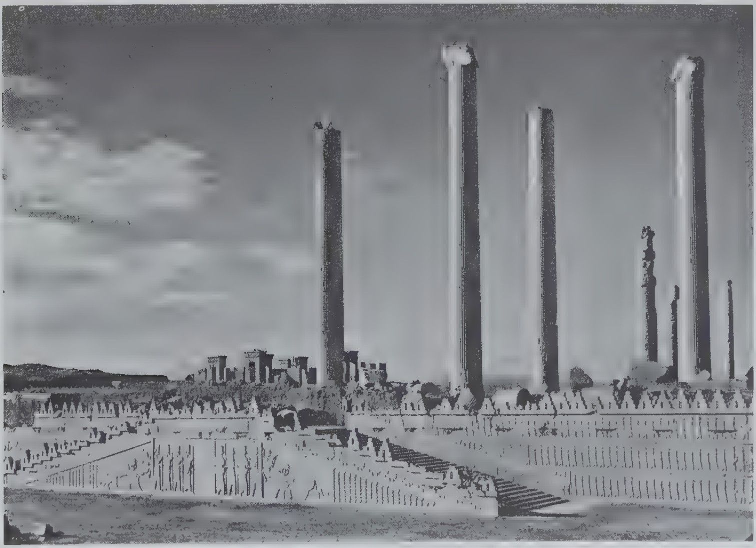

Figure 20. Persepolis. The Apadana with the palace of Darius in the background. (Courtesy of the Oriental Institute, the University of Chicago.)

first three operations on non-Zoroastrians. The Code of Zoroaster resembled the Code of Hammurabi and evidently was modeled on it. Fees were determined according to the status of the patient.

It is with the Achaemenian kings, from about 650 B.C., that Persian history begins. The most famous of these kings were Cyrus the Great and Darius IX.

Ultimately Alexander the Great invaded Persia and terminated the Achaemenian influence, demolished the palace of Persepolis, and destroyed most of the Zoroastrian literature.

CONTRIBUTIONS OF ANCIENT EGYPTIANS

The ancient empire of Egypt occupied the long, narrow valley lying on each side of the Nile. It was a rich, fertile area nourished by the annual floods that inundated the area and deposited valuable silt. Grain was grown very early in the valley of the Nile, causing Egypt to be referred to as the "bread basket of antiquity." The importance of grain in the valley is seen in the Biblical story of Joseph. This land of the pharaohs has been a land of mystery, but its secrets are beginning to be unraveled with persistent and careful research. The story of this region scans thousands of years; the study of its records is a special science known as Egyptology.

A highly developed culture was noted very early here, as were the artistic and intellectual achievements of the Egyptians. Many architectural structures have been left as mute testimony to this fact. The fine clay deposited from the flood waters of the Nile furnished the material needed for architectural pursuits. From this, the field

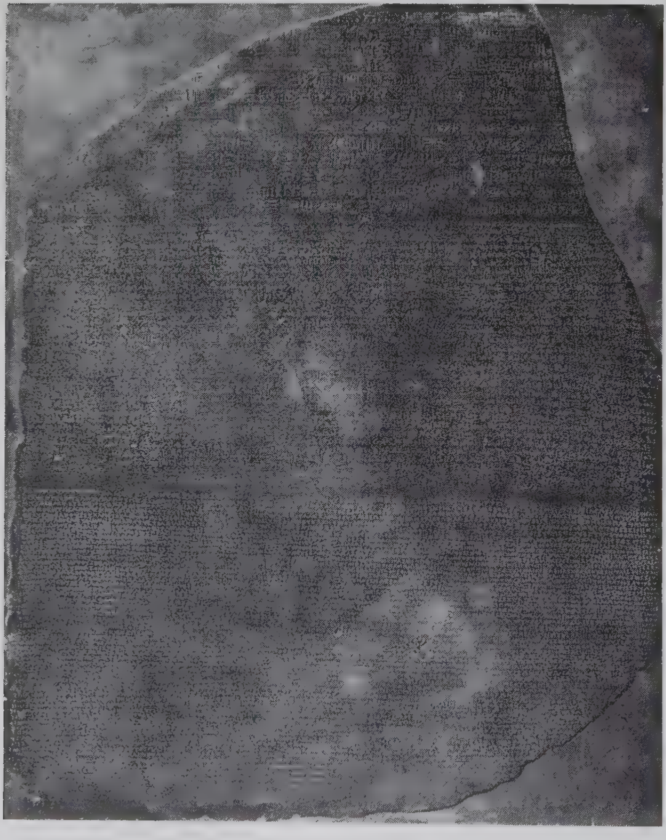

Figure 21. The Rosetta Stone. (Courtesy of Oriental Institute of University of Chicago.)

of ceramics evolved and ultimately the sun-dried and kiln-dried bricks became useful for records. These have withstood the ravages of time and assisted us in studying the customs of the people, for these structures contained hieroglyphic and pictorial carvings in brilliant colors.

Writing was introduced first in pictographic form, then as signs or *hieroglyphics*. Hieroglyphics were cut in stone; later they were found in ink on papyrus. The key that enabled philologists to decipher this complex language came in the form of the *Rosetta Stone*. This polished black basalt slab was inscribed by the priests of Ptolemy in three columns, one in hieroglyphic, one demotic, a corrupt form of hieroglyphics, and the third in Greek. This was virtually a dictionary in three different languages. The stone was found by the troops of Napoleon near Rosetta at the mouth of the Nile River in 1799. It was captured by the British in 1801 and is exhibited in the British Museum.

The place where the ancient Egyptians left us their best efforts in the area of communication skills is in the *pyramids,* those giant sarcophagal vaults or tombs. Scrutiny of these pyramids has helped us to understand the burial customs, the philosophy and the religious beliefs of the Egyptians. They believed that at the termination of physical life the soul continued to exist through all eternity. There was another world, another life beyond the earth and sky, peopled with the dead. Each person brought with him to this new world the essential earthly possessions which he required for daily living including a dwelling, food and drink, clothing and even servants. In the earliest periods, as we noted in the tomb of the Sumerian queen, it was the custom of the Pharaoh, or a very socially prominent person, to require his servants and slaves to be sacrificed to accompany him in death so that he could arrive in the new life with his household retinue. In later periods this practice seemed too cruel or too expensive, so that artistic representations—elaborate *wall paintings*—seemed to be accepted as a sensible substitute and many lives were saved. These murals provide an unusually clear photograph of living in this period, and often also indicate disease conditions that were prevalent.

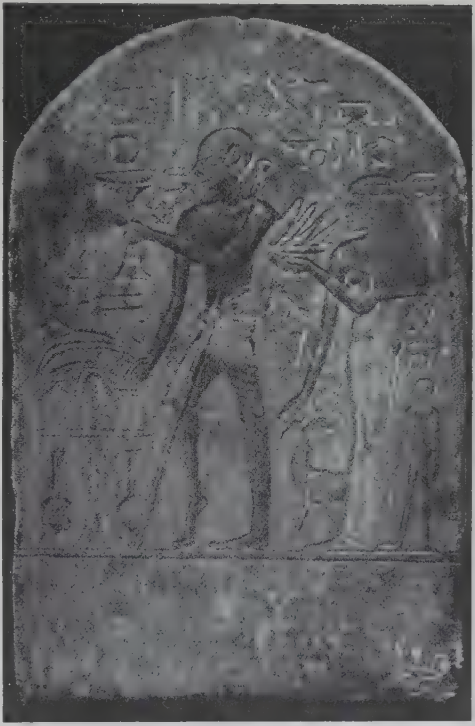
Figure 22. Portrayal of a case of poliomyelitis on an Egyptian tombstone.

In order to build a pyramid and provide the Pharaoh with a peaceful and secure eternal life, thousands of lives were sacrificed through the crack of the whip of forced labor. The pyramid was built at the price of lives, physical torture and an astronomical financial cost. The needs and interests of the population apparently were ignored.

Each Egyptian from the loftiest to the lowliest saved his money to provide his body with the material things that he felt were essential for eternity. In spite of all this emphasis on planning for the future, it was a material planning, not a spiritual one.

The construction of the pyramid built for Cheops, who reigned about 2850 B.C., is said to have taken twenty years and the lives of 100,000 of his subjects. Ceram states that "Using nothing but the power of human hands and backs, 2,300,000 blocks of stone were dragged to the site and piled one atop another. Each of the four sides of the base was more than 736 feet in length. When the last block was in place, the peak of the pyramid towered 467 feet in the air."[5]

Ceram presents a thought-provoking point when he writes, "the pyramid-building urge was the exact opposite of the inspiration behind the great architectural monuments of Christianity. The purpose of the cathedrals of Christendom was to serve the pious community. The stepped towers or ziggurats of the Babylonians were sanctuaries for the gods, publicly used shrines; but the pyramids served the Pharaoh and none other; *his* dead body, *his* soul, and *his* ka."[6]

Grave robbers were a constant threat and even though the pyramids were built in a maze-like fashion, much plunder, stealing and desecration occurred. In order to discourage pilfering, even the few hundred or more workers who knew the exact location of the burial chamber were murdered at the termination of the project. It is assumed that prisoners of war were used for this purpose. Thus, one has but to gaze at a pyramid to recognize that it is not only a resting place for the body of the Pharaoh but also a memorial to the thousands of slaves and prisoners who gave their lives that the monument might be erected.

Many of the possessions within the tomb prove interesting and informative. In 1922, when King Tutankhamen's tomb was discovered, much interest was aroused in the mummy itself and the dazzling array of his personal possessions. The jewels indicate the presence of skilled craftsmen in this period. The presence of many *amulets* on the body of the Pharaoh and around the rooms reveals the influence of superstitious beliefs. The *scarab,* a representation of the dung beetle held sacred by the people of the Nile, was a common amulet, as was the *mystic eye* of the sun god. These were used in pendants, bracelets and rings.

In 1954 popular interest in the ancient Egyptians was stimulated again by the discovery of *solar boats* believed to belong to Cheops. These boats were part of funereal

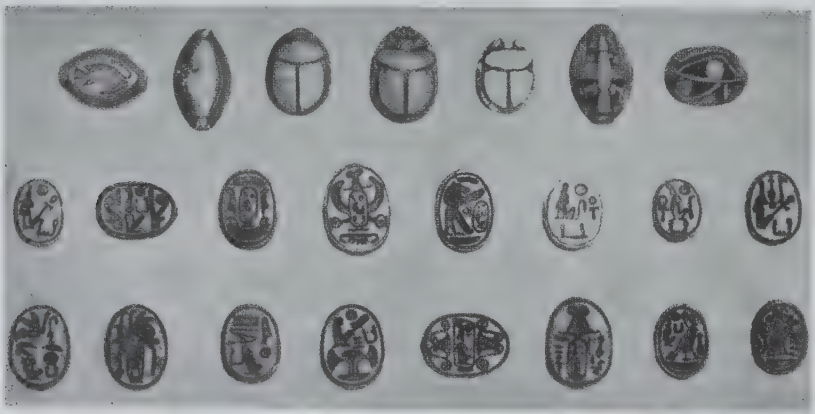

Figure 23. Egyptian scarabs (1480 B.C.). (Metropolitan Museum of Art.)

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[5] *Ibid.,* p. 141.

Figure 24. An Egyptian obelisk which now stands in Central Park, New York City, tells of the deeds of Thutmose III and Ramses II. (Metropolitan Museum of Art.)

preparations for eternity and were to be used for posthumous peregrinations or wanderings. In the complex theology of ancient Egypt the Pharaoh was considered a living god. After his death his spirit was permitted to accompany Ra, the sun god, through the heavens. He was provided with a "solar boat" for this purpose.

The body had to be prepared carefully and preserved against destruction so that the wandering soul could return to it. Thus the practice of *mummification* or *embalming* became necessary. In the *house of death,* an establishment away from civilization, the elaborate process of embalming was carried out by people specially skilled in this field. Special oils, ointments and herbs were used and the vital organs were removed and placed in canopic jars. Though this was an elaborate procedure, it was a routine one and had no connection with scientific advancement. Dissection or observation for medical purposes was not practiced, and the fields of anatomy and pathology were not developed as a result of the process of embalming.

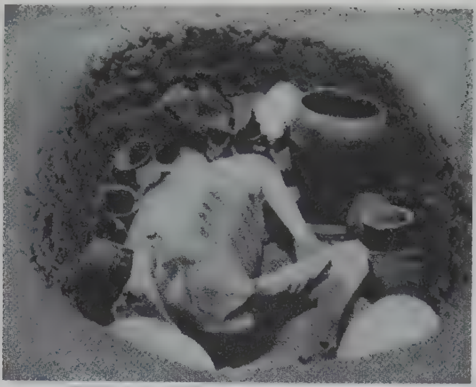

Figure 25. Prehistoric Egyptian grave. The corpse was buried in a squatting position (sleeping position) such as is also frequently found in many prehistoric European graves.

What do we learn about medical care by studying the mummified bodies? It must be kept in mind that the very dry climate of Egypt acted as a natural embalming agent so that many bodies have been found in shallow graves preserved by this dry environment without the benefit or detriment of the artificial embalming process. Looking at these and at the carefully preserved bodies in the tombs we see definite evidences of the diseases that were prevalent at the time. Rare skill is seen in their art of bandaging and in the efforts of their dentists and surgeons.

The position of the *doctor* in ancient Egypt is an interesting one. He, as did the aspirants to all the learned professions, received his preprofessional and professional preparation at the *temple* of the prevailing deity. The practitioners of the professions were usually members of the lower classes of priesthood; religion and medicine were related closely. Patients came to the temple to intercede with the gods and were treated by the medical practitioners. Dur-

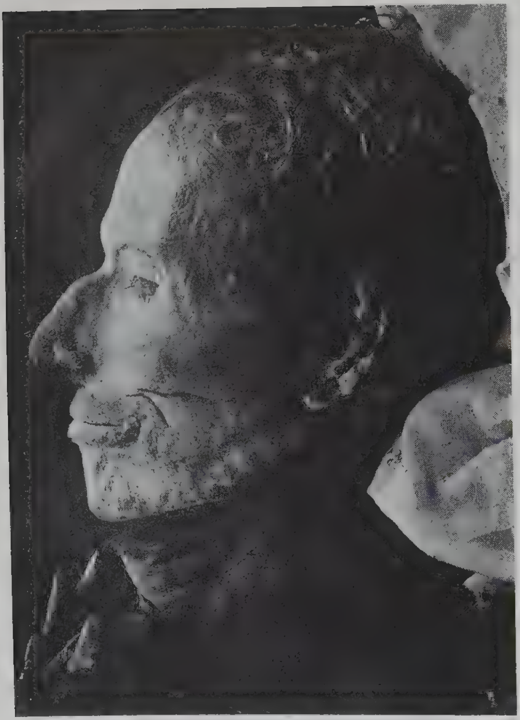

Figure 26. The head of the mummy of Ynaa, father-in-law of King Amenhudet III, found in the Valley of the Kings. (Ceram, *Gods, Graves, and Scholars*. Alfred A. Knopf, 1952.)

Figure 27. Tutankhamun's mummy lay under wings of gold cloisonne. Innermost of three coffins was this golden shell. The headdress vulture is Nekhebet, goddess of Upper Egypt; the cobra Buto, goddess of Lower Egypt. (Metropolitan Museum of Art.)

ing the treatment the *priest-physician* appealed for assistance from the gods and suitable tribute was offered to them.

The Egyptian deities were represented in the animal forms of a ram, an ibis, a falcon, a crocodile and a bull, which was a popular form. Actual animals were worshipped by all Egyptians including the most learned, erudite scholars. Thus a live animal, as the Apis or sacred bull, was housed in the temple and given solicitous attention by the priests of the temple. When the animal died it was embalmed, adorned with jewels and buried in a costly sarcophagus with great ceremony, whereupon the successor was selected carefully. In *Gods, Graves and Scholars* Ceram reports that sixty of these sacred bulls have been found.

The *medical area* of the temple is thought to be somewhat comparable to a large outpatient clinic, with the doctors examining and the medical students observing. There were medical specialists at this time, as Herodotus the famous Greek historian writes: "Medicine is practiced among them on a plan of separation; each physician treats a single disorder and no more: thus the country swarms with medical practitioners, some undertaking to cure diseases of the eye, others of the teeth, others of the head, others of the intestines, and some of those which are invisible [internal]." The physician in charge of the intestines gave the enemas and purges. Trephine operations were performed by the specialist of the head and these were done for medically sound reasons. The physician was also dentist and pharmacist.

One of the most outstanding physicians

was *Imhotep,* chief physician to the court of King Djoser (or Zoser), ca. 2700 B.C. Imhotep acquired fame also as an architect through the construction of the great pyramid for the king at Sakkara. Later Imhotep was deified and ranked with the gods as the Egyptian god of medicine.

Medical records of ancient Egypt have been found and have been of immense value in understanding Egyptian medical care. In all, eight medical papyri have been found and translated. One of the most important and best preserved is *Papyrus Ebers,* acquired by archeologist George Ebers in 1875 and now located in the University Library in Leipzig. This is supposed to have been written originally about 2500 B.C. and recopied about 1550 B.C. It contained approximately 700 prescriptions for all kinds of diseases, arranged in sections according to the different organs to be treated.

The *Edwin Smith Surgical Papyrus* is another famous papyrus scroll and is actually a surgical text. It categorized the diagnoses, treatments and prognoses of types of injuries and fractures according to each region of the body. This papyrus was found by Mr. Smith at Thebes in 1862 and is now the property of the New York Academy of Medicine.

The other member of the trilogy of illustrious papyri is the *Hearst Medical Papyrus* which seems to have been a general practitioner's formulary.

The impression left by Egyptian culture on civilization has been a profound one, due partly to the thousands of years of its existence and partly to the archeological excavations of the evidence of this existence.

In summary, Egypt has contributed more to prove the antiquity of disease than any other country up to this time, because of its natural climate and its religious and funerary customs which combined to preserve the dead. Data have been gathered by examination of skeletal remains, by

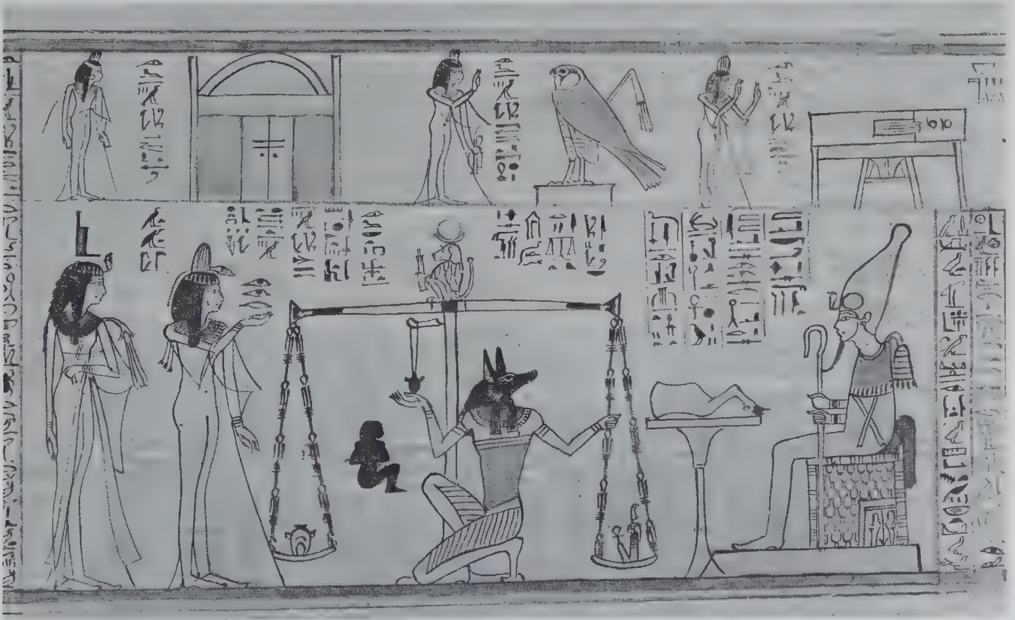

Figure 28. The Judgment (*ca.* 1025 B.C.). Funerary papyrus of Princess Entiu-ny, daughter of King Paynudjem. The princess is shown standing next to the scales in the Judgment Hall of the God Osiris who is seated on the throne. The goddess Isis stands behind Entiu-ny as the jackal-headed god Anubis weighs her heart against truth.

laboratory tests and x-ray, by scrutiny of artistic endeavors and by analysis of the medical and surgical papyri.

THE CRETAN-MINOAN CULTURE

Crete, an island about sixty miles from the Greek mainland, had one of the earliest civilizations, the Minoan culture. Knowledge of this culture is veiled in mystery, for, although the Cretan civilization extended from about 3000 B.C. to about 1200 B.C., its power collapsed suddenly and remained buried in secrecy until 1900 when the archeologist, Sir Arthur Evans, excavated the palace of King Minos in Knossos. This excavation proved Homer's description of the palace to be accurate. The clay tablets found in the ruins contained a hieroglyphic script which, in spite of persistent effort, has not been deciphered yet. Until the solution of this hieroglyphic riddle is realized we are forced to examine the legendary accounts of this country.

The Minoan civilization was named originally for King Minos, the semilegendary son of Zeus. All succeeding rulers were named Minos after him. The Columbia Encyclopedia presents the following account of the Minoan civilization:

> In the early Minoan Age (3000–2200 B.C.) pictographic writing was in use, and copper, silver and gold became known in Crete.
>
> In the Middle Minoan Age (2200–1600 B.C.) civilization reached its highest point. Pottery became a fine art, natural objects were depicted realistically and pictographs were superseded by linear writing in pen and ink.
>
> The Late Minoan Age (1600–1200 B.C.) was a period of slower development (during which the working in bronze and inlaying metals showed great skill) but the cultural center gradually passed to Troy and to the Greek mainland.

Examination of the treasures and the wall paintings in the palace reveal a people accustomed to luxuries and interested in artistic splendor. The jewels and clothing of the women rival the most exquisite fashions of today. Cretan women dressed in an elaborate fashion: their hair was dressed high to wear with tiny hats; gowns woven of gold or silver covered their bodies except for the arms and bosom, and jewels sparkled even on their high-heeled shoes.

The fairest maidens and youths, usually Athenians, were sacrificed to the god, the Minotaur or sacred bull, which was confined in the labyrinth of the palace and lived on human flesh. It has been said that the chief priest, Minotauras, of the temple of the Minotaur furnished the meals of human flesh at stated intervals in the form of the most attractive of girls and the most perfect of youths. The Cretans' unusual life of luxury, periodically interrupted by this pitiful human sacrifice, was ended suddenly by the extermination of the entire culture.

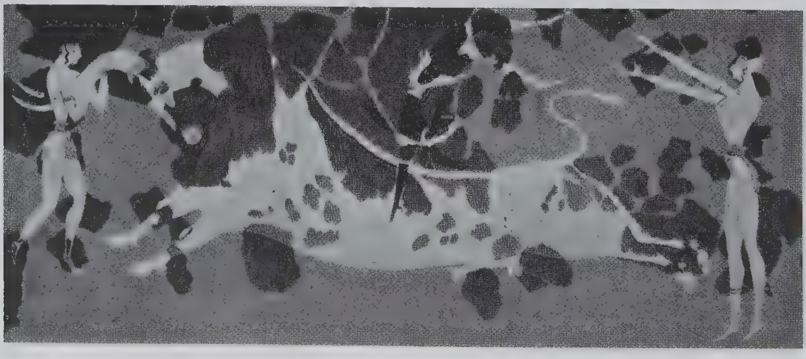

Figure 29. Bull dancing scene at Knossos. (University Prints. Candia Museum.)

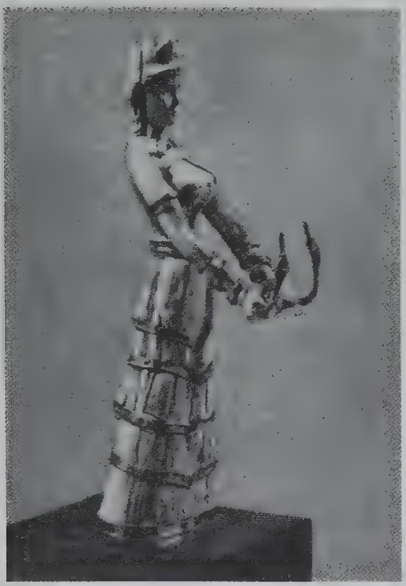

Figure 30. Snake goddess, gold and ivory statuette from Crete, about 1600 B.C. (Museum of Fine Arts, Boston.)

Well known Greek legends about Theseus, the Greek hero who achieved remarkable feats, are brought to mind at this point. Notable among these legends is Theseus' killing of Procrustes, the robber who tortured his victims in an iron bed, and his slaying of the Minotaur in the Cretan labyrinth with the help of Ariadne, the daughter of Minos.

The Cretans were masters of the sea and accomplished in sanitary skills; their homes had bathrooms which was very progressive for this time. There seem to have been no known contributions in medicine, nursing or care of the sick in this period of prosperity and artistic accomplishment.

THE ANCIENT HEBREWS

The best source book on the history of the Hebrews[7] is the Old Testament of the Bible. The oldest traditions of the Hebrew people are found in Genesis beginning with the genealogy of Sem, the birth of Abraham and the presentation of the patriarchal history.

Abraham, who was called Abram originally, grew up in Ur, a Babylonian city on the lower Euphrates not far from the Persian Gulf. Called by God to leave the polytheistic surroundings in Ur, he settled in Canaan (much later this area was know as Palestine and now, Israel.)

The historical thread of the ancient Hebrews has been noted in the Babylonian, Assyrian and Egyptian cultures. After Abraham's divinely inspired trek out of Babylonia to Egypt and thence back to Canaan, a solemn covenant was made between God and Abraham who was to be the father of a people chosen to preserve the worship of one God. This covenant, which was renewed with Moses on Mount Sinai 500 years later, contained privileges and such obligations as the necessity to circumcise every male child of Abraham's descendants. It is interesting to note that a sharpened stone was the instrument used by Abraham to circumcise himself.

The outstanding contribution of the ancient Hebrews to the cultural heritage of the world was their religion. This religion of one true God, Yahweh, made them unique among all their contemporaries. They were God's chosen ones. His guidance and divine revelation is apparent in the men sent by God to guide His people: "From the time when your fathers left the land of Egypt until this very day I sent you all my servants, the prophets, early and late."[8] This constant, divine guidance kept their religion alive despite the ever-present attractions of the polytheistic influences of the Hebrews' neighbors.

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[7] The words "Hebrew," "Israelite" and "Jew" are often used synonymously. A Hebrew is a descendant of Heber, a great-grandson of Sem; an Israelite is a descendant of Israel, a name given to Jacob; a Jew is a descendant of the Kingdom of Judah. After the division of the Kingdom, the northern branch took the name of Israel, and the southern section became the Kingdom of Judah. The names "Hebrew" and "Israelite" are used synonymously when referring to the entire race from very early times, the name "Jew" being used to designate the later groups especially after the Babylonian captivity. Williams, Henry Smith: *The Historians' History of the World.* New York, The Outlook Company, 1904, pp. 45–46.

Moses was one of these divinely motivated "servants." He was born in Egypt at a time when the presiding Pharaoh was alarmed at the disproportion in population between the Egyptians and slaves (captives from conquests of hundreds of years) on the one hand, and between Egyptians and freeman, such as the Hebrews, on the other. The Hebrews were particularly irksome to the Egyptians because of their religious adherence to Yahweh and their lukewarm interest in worshiping the Egyptian deities. The Pharaoh commanded therefore that the Hebrew birth rate must decrease. The first suggestion was to engage the men in a building project at which they were whipped and treated cruelly, becoming physically exhausted. When this proved unsuccessful, midwives were ordered to kill all Hebrew male offspring. Since this attempt at wholesale genocide failed, an order was issued to drown all Hebrew male babies in the river.

It was as a result of this order that at birth Moses was placed in the river in a waterproof reed basket and withdrawn from the water by the Pharaoh's daughter who raised him as her son in the best Egyptian tradition of the time.

He received a superior education for his era. Although his learning was obtained in a pagan atmosphere, his mother, who had been selected as nursemaid for him, inculcated in him the religious beliefs and traditions of his Hebrew family heritage.

Moses responded obediently to God's command to lead His people out of bondage but met with stubborn opposition from the Pharaoh. It was not until the tenth plague killed the first-born of each

Figure 31. Moses comes down from Sinai.

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[8] Jeremias 7:25.

Egyptian family that the Pharaoh released reluctantly the Israelites. One of the customs of Judaism started at this time when Moses commanded that a lamb be killed and eaten after the blood had been sprinkled on the doorpost of every Hebrew home in Egypt. The angel of the Lord "passed over" these houses and the Hebrews received protection from the avenging angel of the Lord. This custom of *Passover* has been perpetuated by succeeding Hebrew families.

Moses did not have a peaceful religious pilgrimage on this trip out of Egypt and onward toward the Promised Land. The Israelites complained constantly and vacillated between their religion and the practices of their polytheistic friends, including the worship of idols and carrying amulets as the Egyptians had done.[9] On Mount Sinai, God gave to Moses the *Ten Commandments* and the First Commandment was an injunction against this practice of worshiping false gods. Yet, before Moses reached the foot of the mountain, the people had cajoled his brother Aaron into collecting all their golden jewelry to construct a golden calf or bull which they idolized promptly. In fury and disappointment, Moses smashed the newly acquired Ten Commandments against a rock. A newly hewn set was kept in the Ark of the Covenant.

For forty years the Hebrews wandered in the wilderness. Then, led by Joshua who took command at the death of Moses, they seized Jericho, invaded and conquered Canaan, and distributed among twelve tribes the land which they called Palestine. For about two hundred years they were ruled by the judges.

The Hebrews, realizing the need for strong unified action, believed that they were ready to establish a monarchy. The judge and prophet Samuel carried out the necessary plans. Saul was crowned king. He was successful at the beginning of his reign and then became subject to periods of melancholy and depression. David, a young shepherd and a gifted harpist, soothed Saul with relaxing music. Saul took his own life when he was unsuccessful in battle, and David succeeded him as king.

David, a personable young man, was admired and honored. The new capital, Jerusalem, was called the City of David. This brilliant leader was succeeded by his son, Solomon, whose famous temple replaced the portable tabernacle housing the Ark of the Covenant. During his reign, resentment smoldered and after his death precipitated the division of the kingdom into two parts—the ten tribes of the northern part known as the Kingdom of Israel and the two tribes of the southern part still centered in Jerusalem called the Kingdom of Juda. The northern section with Samaria as its capital existed for about two hundred years and then was conquered by King Sargon II of Assyria. Eventually the Babylonians conquered the Assyrians. Many important historical events were prophesied during this period, which has been referred to as the Era of the Prophets.

The Kingdom of Juda was captured by Nebuchadnezzar, and in the year 589 B.C. the people of Jerusalem were brought back to Babylon as captives. The Babylonian Exile lasted until 538 B.C., when Cyrus conquered the Babylonians and permitted the Hebrews to return to Jerusalem. In 331 B.C., Palestine was captured by Alexander the Great. The Hebrews were ruled by Alexander's generals for some years.

Between 175 B.C. and 163 B.C. a period of slavery and cruelty was instigated by the king of Syria, Antiochus Epiphanes. A revolt followed, and a holy war was carried on under the able leadership of Judas Maccabeus. Thereupon, an era of inde-

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[9] Reference to the prohibition of carrying amulets is noted in Genesis 30—35.

Figure 32. King Solomon's Temple. (Courtesy of New York Public Library.)

pendence lasted until the Roman armies, led by Pompey, invaded Palestine in 63 B.C. Then, Palestine was absorbed into the expanding Roman Empire. Later, Caesar divided it into four parts and appointed a tetrarch over each unit. It was at this time that Herod, a Jewish prince, was appointed tetrarch of Galilee.

The Romans gained control of the political positions through uprisings and wars and finally seized Jerusalem. The history of the ancient Israelites came to an end.

Many rules and regulations were propounded in regard to social and religious customs and health and sanitary practices. These are compiled in what is called the *Mosaic Code.* This code presents a systematic, organized method of the prevention of disease. It included principles of personal hygiene relating to such things as rest, sleep, hours for work and cleanliness, and included especially rules for women concerning menstruation and child bearing. Principles of public hygiene and sanitation are noted in the rules for the selection and inspection of food and for the slaughtering of animals for food, in the regulation of diet and disposal of excreta and garbage, and in the diagnosis and reporting of communicable diseases with concomitant isolation, quarantine and disinfection. The knowledge of the importance of animals in the transmission of disease is portrayed vividly in the story[10] of the capture of the Ark of the Covenant by the Philistines who brought it to the temple of their god, Dagon. Not only does the story describe the epidemic of bubonic plague but emphasizes the place of rodents as carriers of the disease.

Sanitary legislation has been shown in the accounts of the cases of leprosy in which the afflicted were inspected, isolated and reinspected before being readmitted to the community. Diphtheria was one of the most dreaded diseases and when it occurred the horn (shofar) was blown to warn the community of this calamity.

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[10] I Samuel 5—6 (also called I Kings).

Each culture has left some evidence of the diseases with which it was visited, but the Bible has furnished as graphic a picture of the afflictions of this period as the Egyptian wall paintings and mummies presented. In addition to leprosy and diphtheria, dysentery, dropsy, apoplexy and mental illness have been mentioned; some of the treatments prescribed were circumcision, the use of fig poultices, artificial respiration and the use of music as therapy for mental illness.

The high priest was priest-physician and health inspector whom the Hebrew people were admonished to honor. Persons excluded from the community because of disease were compelled to secure permission from the priest-physician before returning; the cured leper was addressed by these words: "Go and show yourself to the high priest."

Houses of hospitality, forerunners of the later inns, hotels and hospitals, were plentiful. The Hebrews were exemplary in the practice of hospitality, for visiting and caring for the sick was a religious duty. As in Egypt, midwifery was an established vocation.

Today, many of the Hebrews adhere to the traditional practices laid down so carefully for them in this ancient period. Their fundamental laws of moral and physical conduct are found in the *Torah,* the Hebrew name for the first five books of the Old Testament which are called the Pentateuch. The Torah, containing the written law, and the *Talmud,* embodying the compilations of oral law, have been the accepted authority for Orthodox Jews everywhere.

The significance of the family as a social and religious unit is stressed today as it was in the time of Moses. The Biblical story of Ruth is an inspiring picture of family life. Ruth, a Moabite, married the son of a Hebrew couple and after her mother-in-law was bereft of her entire family, including Ruth's husband, Ruth

Figure 33. David playing before Saul to soothe and quiet him. Rembrandt.

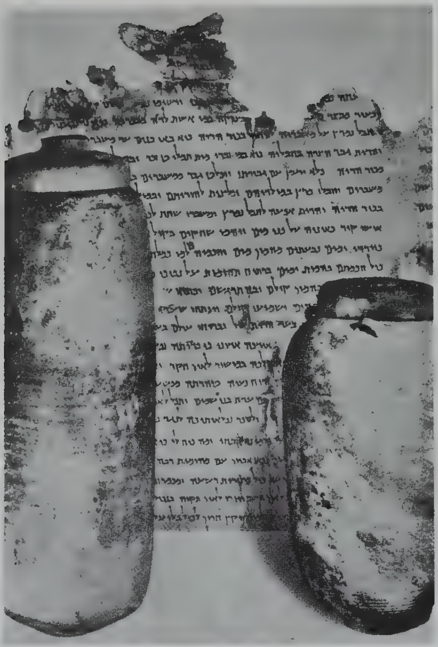

Figure 34. A fragment of the ancient Dead Sea Scrolls and two clay jars used to preserve them.

extended to her this example of filial devotion:

> Entreat me not to leave thee
> Or to return from following after thee:
> For whither thou goest
> I will go;
> And where thou lodgest
> I will lodge:
> Thy people shall be my people
> And thy God my God . . .

A very important discovery was made in 1947 when two Arab Bedouin boys found a number of scrolls imbedded in heavy wax inside large clay jars in a cave near the northwest end of the Dead Sea. One of these scrolls, referred to as the Isaiah Scroll, is now in the possession of the Hebrew University in Jerusalem. (Isaiah was the prophet, born in Jerusalem ca. 765 B.C., who foretold, among other events, the destruction of Babylonia, the defeat of Sennacherib, the Assyrian conquests, and the coming of the Messiah.)

The scrolls came from the library of a monastic group called Essenes who had settled in the Qumran area from shortly after 150 B.C. until 68 A.D. Information has been gathered from the scrolls themselves as well as from such sources as the writings of Josephus, Pliny, and Philo. The Essenes were members of a Jewish sect that had withdrawn from Judaism shortly after the Macchabean revolt of 166 B.C. They travelled into the wilderness of Judea and formed a community whose stated purpose was "to prepare the way of the Lord in the wilderness." This was to be achieved by practicing penance, by strict observance of the ancient law and by absolute purity in matters sexual and ritual.

This monastic community grew in numbers and required enlarging their facilities. About 110 B.C. an aqueduct system was developed which included conducting and preserving water for the use of the community. In addition, they provided an assembly hall, kitchens, bakery, community dining hall, store houses, pottery shop, library and a scriptorium where manuscripts were copied.

In 68 A.D., the Tenth Roman Legion reduced the buildings to ruins and ended the history of the Qumran community but not before the sacred scrolls had been moved to the near-by caves and hidden skillfully from the enemy.

Nearly nineteen centuries elapsed before this extensive library was discovered and scrutinized. One cave alone yielded four hundred manuscripts written in Hebrew, Aramaic and Greek. This wealth of material was considered one of the most important legacies for posterity and the greatest manuscript discovery of modern times.

About one fourth of the subject matter of the manuscripts is concerned with the Bible. Some of them are older than the Essene community itself. The scrolls parallel Old Testament manuscripts while predating all existing copies by at least a thousand years. The works that have been

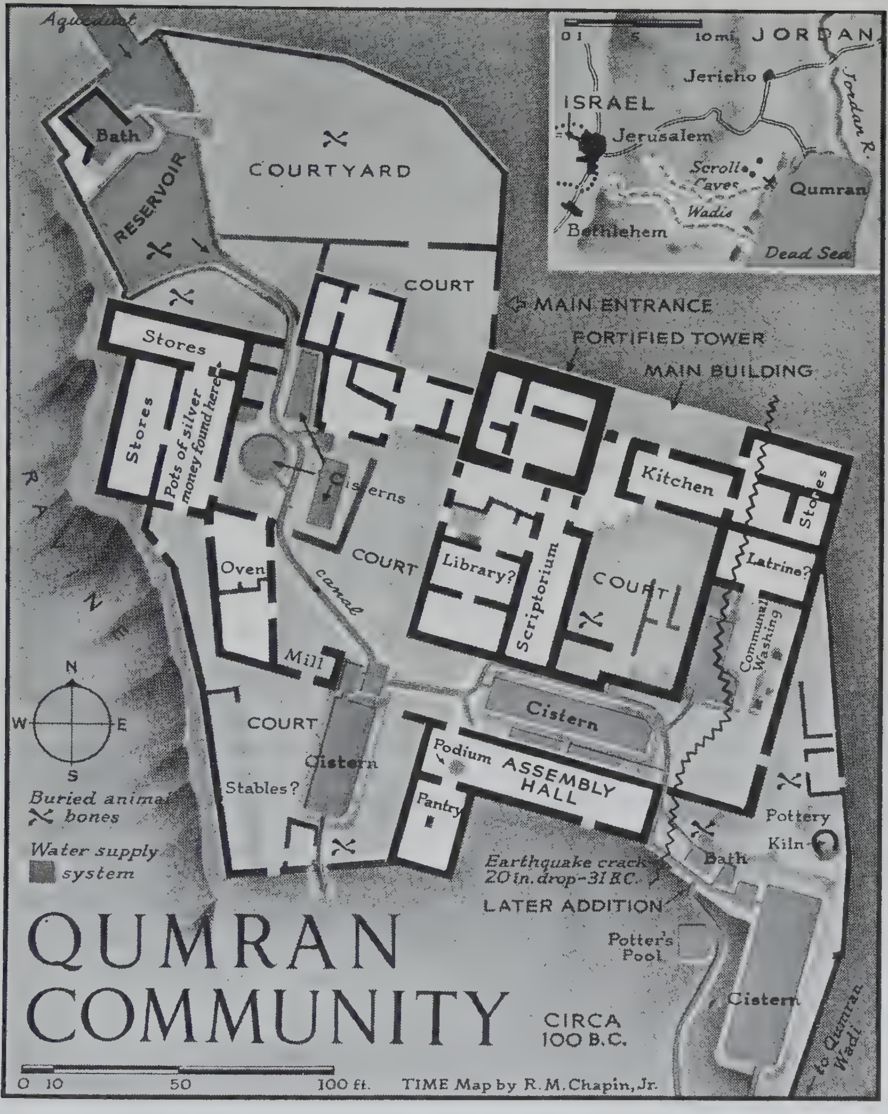

Figure 35. Qumran Community, *ca.* 100 B.C. (Courtesy of *Time.*)

found include all of Isaiah, much of Samuel and sections of all the other Old Testament books except one. It is hoped that further scrutiny of these scrolls may reveal other contributions and additional information about the Hebrews.

Aids to Enrich an Understanding of This Period

I. Visit museums containing exhibits featuring contributions of ancient civilized cultures.
II. Construct dioramas of the aspects of the care of the sick in various ancient civilized communities.

III. Assemble specimens of postage stamps representative of historical events and personalities, entitled "Ancient Cultures in Philately."
IV. Compile a collection of pictures on "Care of the Sick in Art," "Comparison of Ways of Living," "Woman's Dress in Ancient Cultures."
V. Prepare a scrapbook on famous personalities, "Who's Who in this Period."
VI. Listen to musical interpretations pertinent to this period such as selections from Verdi's opera *Aida.* Consult a book on the stories of the operas to assist in a fuller understanding of the opera and its historical setting.

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III

Ancient Cultures (Continued)

ANCIENT AMERICAN CULTURE

The coming of the Santa Maria, Pinta and Nina to our shores prompted historians to write books about the "New" World, but they were actually additional chapters in the over-all history of the Americas. We have become cognizant of the fact that highly developed cultures had flourished in the Western Hemisphere before Columbus, before the Spanish conquistadores, and even before the arrival of the Norsemen. Hermann states that "it may be assumed with some certainty that highly evolved cultures flourished on the soil of the New World from 2000 to 1000 B.C. but that is all we do know for sure."[1]

There are still many questions to be answered by historians and archeologists. Who were these people, where did they come from, and how did they get here? Were they related to other ancient groups? If so, by what intercontinental or interhemispheric route did they travel; was the legendary continent of Atlantis actually available to them at that time? Were they descendants of Noah, and if so, did they settle in these parts after the punitive deluge? Were they one of the lost tribes of Israel? Does the presence of hieroglyphics, reed boats and pyramid-temples indicate some past connection with Egypt?

Until these questions are answered, attention is focused on only three of the rediscovered cultural groups that existed in Central and South America: the Maya, Inca and Aztec Indians.

The *Mayan* Indians were supposed to have occupied the Yucatan peninsula from about 2500 B.C. to about 1600 A.D., but the earliest certain date is 320 A.D. Rediscovery of their ancient cities began in 1839. Archeological investigation has revealed that the people were skilled in astronomy, art and mathematics, and produced an excellent calendar.

Yucatan, the center of the Mayan culture, and Guatemala are unbelievably rich in ruins. Pyramids and other architectural feats are being extracted from primeval jungles. The curious hieroglyphic inscriptions on the Mayan ruins have not been deciphered completely, but many legends have been recounted of the early customs of the people. One of these explained that in times of stress, processsions of people wended their way to the Sacred Well of Sacrifice. Their objective was to placate the irate gods with offerings of beautiful maidens and captive youths. At the termination of the ceremonies, the maidens were thrown into the Sacred Well, and the youths killed on the sacrificial blocks.

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[1] Hermann, Paul: *Conquest by Man.* New York, Harper & Brothers, 1954, p. 188.

These stories intrigued one archeologist who, after receiving deep sea diving lessons, returned to the Sacred Well and began his excavations. The validity of this old Mayan legend was proved when he dredged from the Sacred Well the bones of youthful maidens.

Mayan religious practices centered around human sacrifice. One form of sacrifice was the removal of the hearts of adults, and in another children were sacrificed. The ceremonies were presided over by either the high priest or members of the priesthood. In addition to this duty, the priests were also soothsayers, medical advisors and herbalists.

The custom of skull deformation was common among the Mayas. Four or five days after birth, children were placed face downward and a board was tied to the back of the head and one to the forehead. These were bound tightly together so that the head was compressed upward. The Mayan stone cutters depict this condition and show the receding forehead that forms a continuous line with the nose.

Mayan medical practices are not obvious; one apparent custom was *sweat baths* which were used for medicinal purposes.

The *Aztecs* were an aggressive warlike group ruling central Mexico at the time of the Spanish Conquest. Our knowledge of the Aztecs stems from the native manuscripts, "codices," which present in pictographic form some of the important periods in their history. The vivid accounts of several of the Spanish conquistadores, as well as the excavations of the archeological teams, have been valuable sources of information.

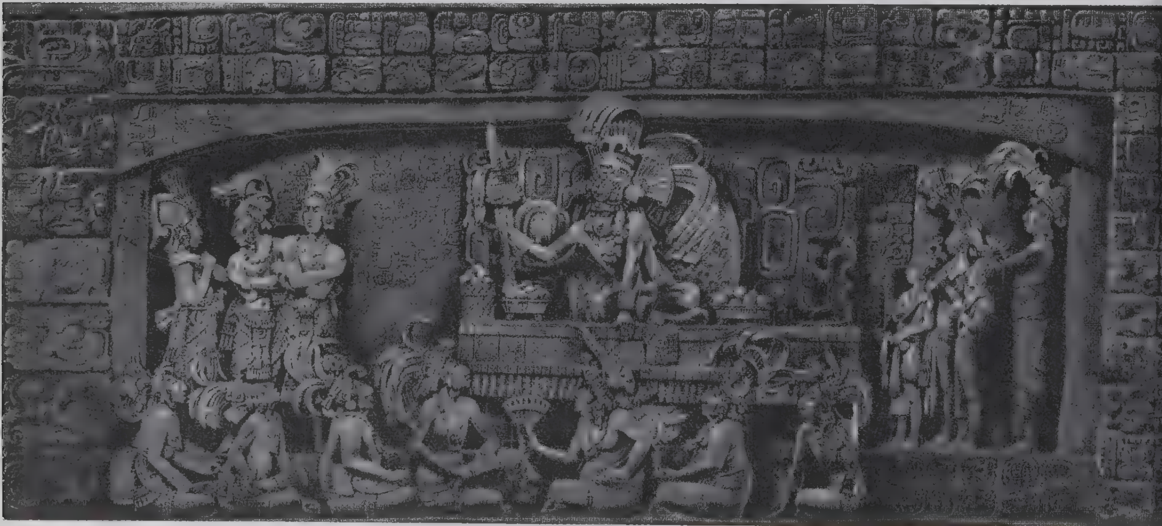

Figure 36. An ancient American art masterpiece which shows a chief or high priest conducting a conference. The natural setting and realistic expression is executed superbly. Note the hieroglyphs forming the border and the deformation of the heads of the members. (Courtesy of University Museum, Univ. of Penna.)

Mexico City stands on the remains of the Aztec kingdom. Not far from the city, the Pyramids of the Sun and Moon can be viewed; these pyramids of ancient America functioned as temples for religious ceremonies.

The Aztecs worshiped the sun. Their celebrated Calendar Stone was essentially a monument to the sun god, Tonatiuh. The stone on exhibit at the National Museum in Mexico City is carved on black basalt.

The solar calendar was based on a 365-day year of eighteen months with twenty days each. The five days left over were bad luck days when as little work as possible was done.

One religious practice of the Aztecs required human sacrifice in an atrocious form. At the climax of a ceremony the living heart was excised from the bodies of a thousand or more victims. When Cortés asked Montezuma's permission to visit one of the temples, he observed the block on which these sacrificial victims were slaughtered with an obsidian (volcanic glass) knife.

The Aztecs had great faith in sweat baths and many sweat houses, or "temascals," have been found. However, the Aztecs, like the Assyrians before them, left no record of medical accomplishments.

The *Inca Empire,* a pre-Columbian Indian empire, was located in Peru. The Incas were skilled engineers and provided themselves with a remarkable system of roads and suspension bridges; they also left evidence of medical prowess. Their outstanding medical technique was trepanning; they were noted also for their skillful cranial bandaging. In 1953 two of Peru's distinguished brain surgeons borrowed bronze chisels, flexible bronze needles and obsidian saws from the National Museum of Archeology. These instruments, which were approximately 2500 years old, were used by the surgeons very successfully. These surgeons experi-

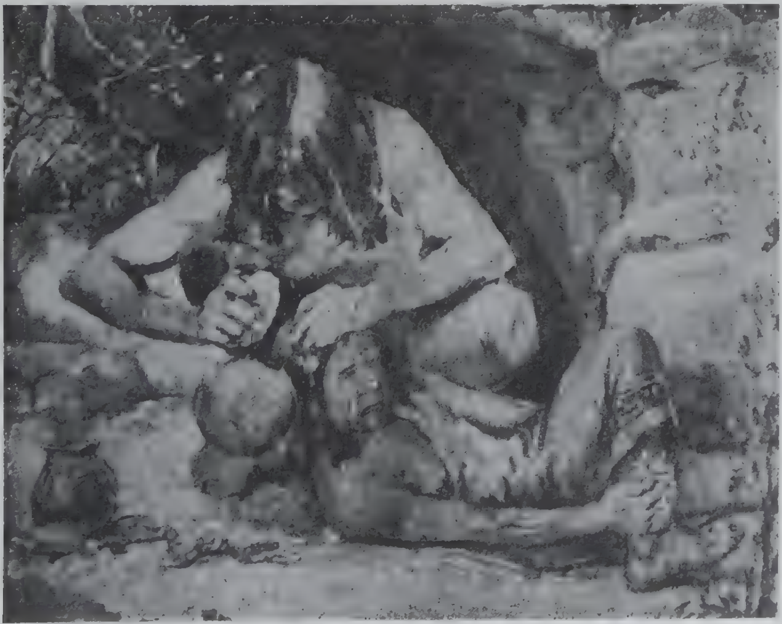

Figure 37. An ancient Peruvian trepanning operation. In the above sketch a hole is being made in the skull into which the oil, heating in the clay pot, will be introduced. To produce sedation, the operator applies coca juice into the affected area from the coca leaves which he chews. Courtesy of R. L. Moodie. Reproduced from *Paleopathology.*)

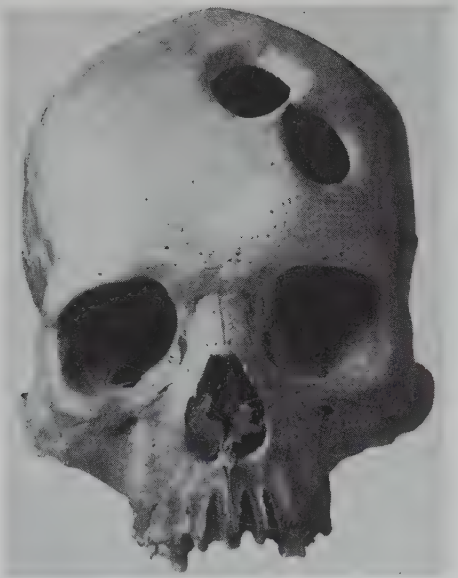

Figure 38. A trepanned skull from Peru. (Courtesy Peabody Museum of Yale University.)

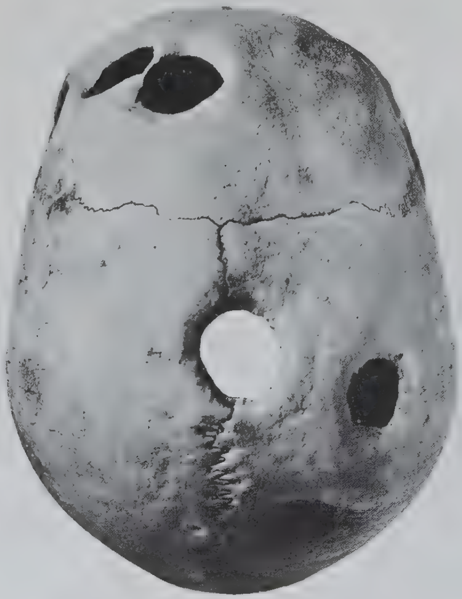

Figure 39. A trepanned skull from Peru. (Courtesy Peabody Museum of Yale Univ.)

mented also with a three-layer bandage tourniquet such as the Inca and pre-Inca surgeons had wrapped tightly around the patient's head. Wider use of this tourniquet bandage, which was used also by ancient Egyptians, was urged by the modern surgeons because it provided an almost bloodless field of operation. In 1954, Smithsonian curators went to the San Diego Museum of Man to examine an old Peruvian skull which bears this original surgical dressing, consisting of a roll of finely woven white cotton gauze held in place by several strands of strong, finely twisted woolen cord. The curator's purpose was to prepare an exact duplicate of this bandage to be used at the Smithsonian Institution exhibit tracing the evolution of surgical dressings.

The many physical afflictions with which man was seized at this time were attributed to the displeasure of the gods. Tribute to the gods took the form of a pottery or stone effigy ("huaco") of the sick person. Many of these effigies have been found and, along with skeletal remains, assist us in understanding the pathological conditions which prevailed in Central and South America.

The early inhabitants of the widely separated areas of the Americas differed in physical appearance, manner of living, way of making a living and language. Customs ranged from the most advanced way of life to the most primitive.

Diseases were prevalent and many marked evidences have been observed. Medical treatments abounded, including bloodletting, cupping or sucking, massage, sweating, splinting, setting of bones, tooth extracting, amputation, suturing, bandaging, poulticing, and trepanning.

Herbs were administered for emetics, laxatives, purges, diuretics and for the relief of respiratory distress. Poisons were known and used. Cobwebs were utilized, very much as they were by the ancient Egyptians, to encourage coagulation of blood in wounds.

Cupping was the sucking or drawing out of a foreign object by the use of a hollowed out horn. Many of these treatments

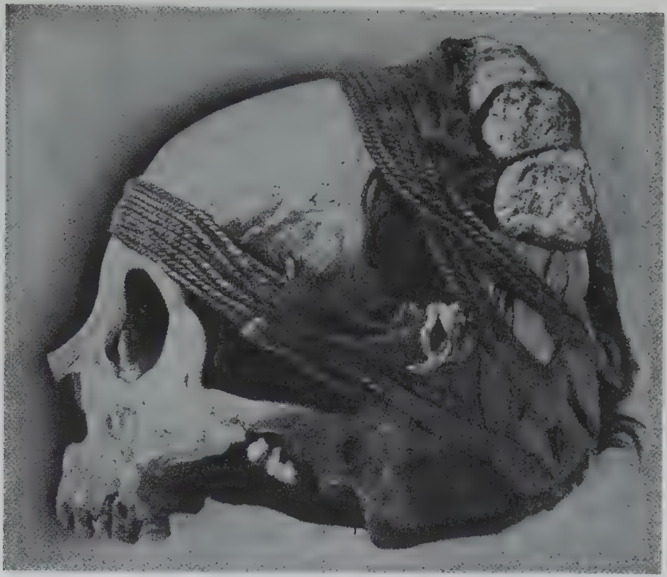

Figure 40. An old Peruvian skull showing a trepanation bandage. This specimen now in San Diego Museum.

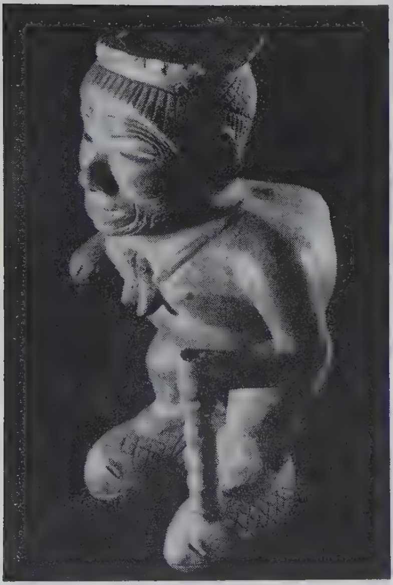

Figure 41. Clay figurine depicting disease among pre-Columbian Indians of Central and South America. (Courtesy of Howard Dittrick Museum, Cleveland Medical Library Association.)

were performed only by the medicine man.

The use of sweat baths or sweat huts held a prominent place in the mores of the various groups of American Indians. Methods of achieving the objectives of the bath varied with each group. Most frequently it consisted of pouring or sprinkling water over very hot stones which were enclosed within an airtight structure or hut.

Some groups incorporated the use of aromatic substances in the procedure while others beat their bodies with bunches of twigs to stimulate the circulation of the blood to hasten the sweating process. Many Indians terminated the bath with a quick plunge into cold water or by rolling in the snow.

The sun god was worshiped by ancient American groups, especially the Iroquois, Aztecs, and Incas. The therapeutic value of heat as well as light may have been recognized.

Several colorful customs persist; one of these embodies art in the therapeutic plan of *sand painting.* Medicine men have been skilled in the creation of these intricate designs which were made specifically for an individual and a special occasion. They were most useful in the ceremony for the healing of an illness.

The medicine man gathered many varieties of colored sand and crushed minerals. He carried out his plan by the skillful ma-

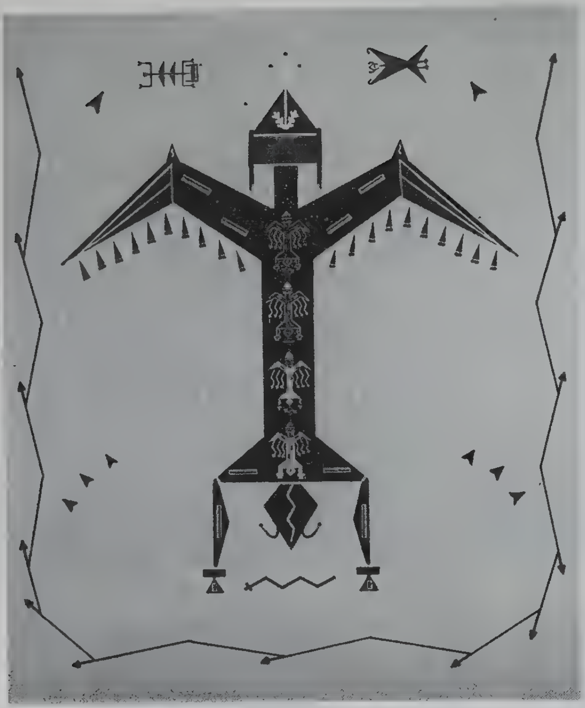

Figure 42. Replica of sand painting, made by L. Douglas; done in sand as used by Navajo medicine men. (Courtesy of the Museum of the American Indian.)

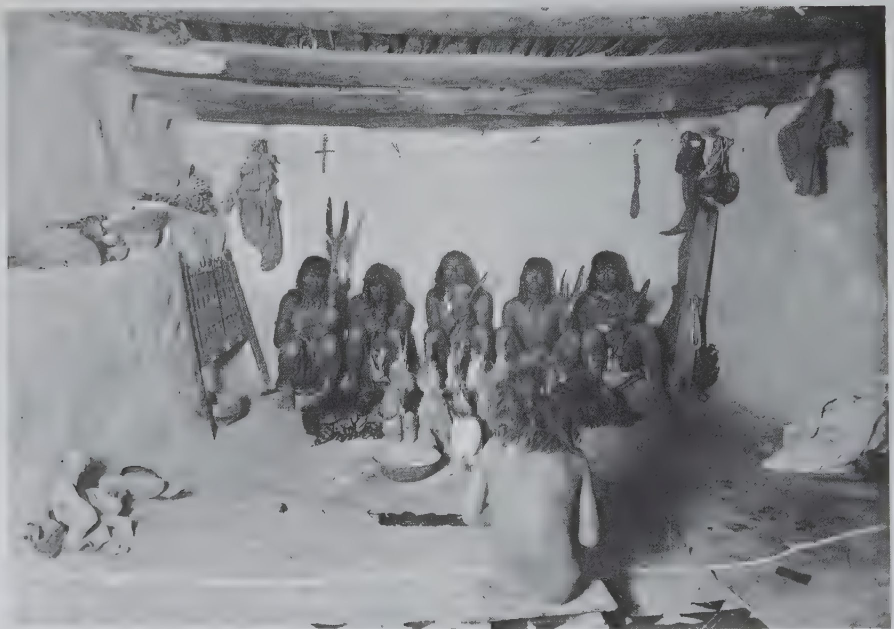

Figure 43. Sick boy undergoes treatment in ceremonial chamber of Giant Society.

This photograph, taken in 1888 by Mrs. Mathilda Cox Stephenson of the Bureau of American Ethnology, depicts a Sia ceremony. The five medicine men are members of the Giant Society, a medicine cult of a New Mexico tribe. The boy had a sore throat and he sat for four days as these men carried out their ritual. (Courtesy of Smithsonian Institution, Bureau of American Ethnology.)

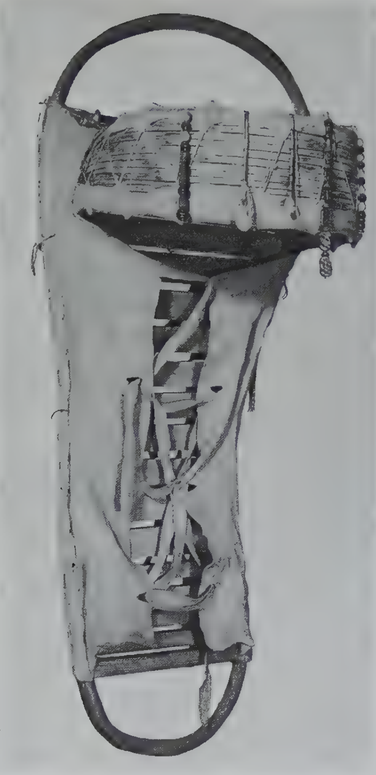

Figure 44. Apache baby carrier or cradle board. Note bead and feather charms to ward off evil spirits. (Courtesy of Museum of the American Indian.)

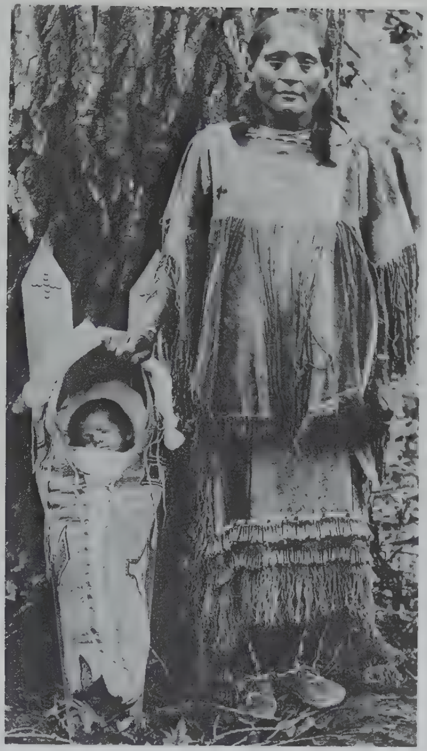

Figure 45. Woman with baby in carrier. (Courtesy of Museum of the American Indian.)

neuvering of his thumb and forefinger which permitted a trickle of sand to follow the predetermined pattern of the painting. Strange but beautiful pictures developed on the natural colored sand background. They had great religious significance and the medicine man endeavored to seek healing through this painting.

These colorful designs were made on the floor of a hogan or a specially built medicine hut. The patient sat in the center of the design as the elaborate ceremony progressed. At its termination the medicine man destroyed the painting, gathered the sand and scattered it to the four corners of the earth. Ancient sand painting ceremonials have been among the most colorful forms of therapy.

Another interesting custom has been the use of *cradleboards*. Navajo babies have two types of cradles. The first is a canopy cradle or "face cover" which is a protective shield from dust and other disturbing elements. When the baby appears to be able to survive, a second and more durable cradleboard is built by the father. Because of their superstitious nature, it was customary not to make preparations for a new baby until the need was assured.

There are many styles of cradleboards. The father may use one flat board, two boards strapped together or slats attached to a frame. Blankets are tucked inside the outer animal skins that are laced and into this the baby is tied securely and comfortably. Cradleboards can be plain or ornate, can be free of ornamentation or have articles to ward off evil spirits in the form of beads, silver or turquoise charms or animal feathers and tails.

Figure 46. Appeal to the Great Spirit. (University Prints. Cyrus E. Dallin, 1861–1944, Museum of Fine Arts, Boston.)

The cradleboard is made to be carried on the back of the mother or propped against a sturdy object. This places the baby on eye level with the members of the family who sit around on the floor of the hogan. This seems to establish his presence as part of the family and increase his feeling of security.

On the Indian reservations in the United States today, many of the primitive customs are perpetuated. Certain practices have been prohibited by the United States government; for example, in 1883 the government forbade the practice of torture that accompanied participation in the Sun Dance. In some areas of the

United States, snake cults flourish, but are looked upon with disfavor when the followers of the cult are severely or fatally poisoned.

In July, 1955, the responsibility for Indian health was transferred from the Bureau of Indian Affairs to the U.S. Public Health Service in the Department of Health, Education and Welfare. From the Public Health Service medical personnel pool has come a 50 per cent increase in doctors assigned to the Indian reservations. Thus, more well prepared doctors will be available to care for a people still very much intrigued by the prestige of the medicine man and his practices.

ANCIENT CHINESE CULTURE

China, the ancient land of Cathay, is one of the largest as well as one of the oldest existing nations in the world. From very ancient times it has enjoyed a high degree of culture. The exact origin of the Chinese race remains a mystery because of the absence of early literature or monuments.

The three early religions in China had an influence on the progress or retardation of medical practice. *Taoism* and *Confucianism* have been indigenous to China while *Buddhism* was imported from India. Underlying these religions has been China's *primitive folk religion.*

Taoism, dating from the sixth century B.C., combined magic and mysticism and emphasized the value of charms in combatting the demons of disease. Usually these charms were written on paper, were burnt and the ashes administered in tea, hot water or some medicinal liquid. Then other charms were distributed around the house and carried on the person's body. Later Taoists, searching for the elixir of life and the transmutation of base metals into gold, adopted the study of *alchemy.* In its truer significance, alchemy became the chemistry of the Middle Ages, and from this medieval science modern chemistry grew.

Since Confucius' time (551–479 B.C.) every aspect of Chinese culture and society has borne the stamp of his teaching. *Confucianism* stressed solidarity of the family, respect for elders, veneration of scholars, and village government by elders. It encouraged the already existing belief in *ancestor worship* which, carried to extremes, handicapped scientific investigation by preventing the dissection of bodies and resulted in a lack of knowledge of anatomy, physiology, pathology and surgery. It was not until 1913 A.D. that legal permission was granted for the performance of autopsies in China.

Progress in medical thinking had been thwarted by the worship of ancient physicians. In fact, as late as 1734 A.D. all court physicians and medical college officials were required to be present at a sacrificial ceremony at which the following prayer was recited:

> Great are the virtues of the ancients. They established the art of medicine to relieve suffering humanity. On this day we offer these animals as sacrifice. May the merciful gods drive away all disease, protect our bodies and grant peace to the country![2]

Buddhism presented a negative approach to the healing art. It taught that sin was the cause of disease and was sent by the gods. Thus, one was not encouraged to cure an affliction. However, an opportunity for cultural exchange, especially in medical concepts and practices, was afforded the Chinese Buddhists who travelled to India on pilgrimages.

These three religions were superimposed on the fundamental Chinese primitive beliefs in universal animism. Basic to the Chinese healing arts have been the usual superstitious practices of sacrificial offerings, frightening evil spirits by beating gongs and shooting off firecrackers and the acceptance of the most bitter medicines offered by the Chinese medicine man.

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[2] Wong and Wu: *History of Chinese Medicine.* Shanghai, China, National Quarantine Service, 1936, p. 185.

The *yang* and *yin* theory established some scientific basis for disease. The yang was the male principle, positive, desirable, active, fiery and full of life in contrast to the yin, or female principle, negative, cold, weak, dark and lifeless. Life consisted in the interaction of these principles, and when they were in equilibrium one was healthy; when there was an improper balance one became ill.

It is obvious that the undesirable aspects of this theory are associated with the female. This is in keeping with the *social position* of the Chinese female which has never equalled that of the male.

Many female babies have been abandoned at birth and the project of rescuing them has been undertaken by all Christian missionaries. Notable among these was *Candida,* who, together with her grandfather, the Prime Minister, was converted to Catholicism in the sixteenth century by Jesuit priests. Candida bought a large estate and used it to lodge and care for the abandoned infants. She and many like her have cared for these unwanted children.

An undesirable Chinese custom was the practice of foot deformation, or the cruel binding of the feet of female babies. This practice was forbidden finally, but it was not until the Christian missionaries encouraged its discontinuance that the custom was abolished.

The influence of the *evil eye* on babies has been a source of worry for parents, so male babies were given female names and dressed as girls hoping that evil spirits would be less interested in afflicting the baby.

Very little mention has been made of the counterpart of the hospital in ancient China. Wong and Wu list the founding of so-called *Halls of Healing* by 651 B.C., while Berdoe[3] indicates that the absence of such institutions was due to the fact that Chinese people would consider themselves remiss in their duty to family and relatives if they did not take care of them at home.

The founder of Chinese medicine is considered to be Emperor *Shen Nung* (*ca.* 2838–2698 B.C.) who was responsible for careful investigation and experimentation of medicinal herbs. He was supposed to have experimented on himself, thus discovering a large number of drugs, including poisonous ones. The results of his research were compiled in the *Pen Tsao* or the Herbal.

Another emperor who contributed to the field of medicine was *Huang-ti* (ca.

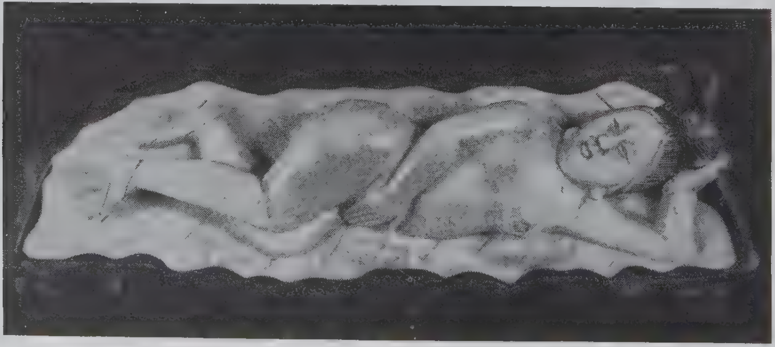

Figure 47. A carved ivory figurine carried by Chinese medicine men and sent into the home for the female patient to mark where she had pain. (Courtesy of Miss Mildred Bowers.)

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[3] Berdoe, Edward: *The Origin and Growth of The Healing Art.* London, Swan, Sonnenschein & Co., 1893, p. 130.

Figure 48. Pharmacy in ancient China. © 1951 by Parke Davis & Co.

2698–2598 B.C.) who has been credited with having written *Neiching,* the canon of medicine. According to the Neiching there were four steps in determining a diagnosis: observation, auscultation, interrogation and palpation (look, listen, ask and feel). Palpation referred mainly to examination of the pulse which was of prime importance. The Chinese were skilled at understanding the pulse and its variations in health and disease.

Both the Pen Tsao and the Neiching were done in lacquer upon strips of bamboo or palm leaves and exhibited the ideographic tadpole characters analogous to the Egyptian picture writing.

Other famous doctors were: *Ts'ang Kung,* first century B.C., who kept records of personal observations that have been considered remarkable case histories; *Chang Chung-ching,* second century A.D., another Chinese physician who left important records and suggestions for medical treatment; and *Hua T'O,* second century A.D., a renowned surgeon who discovered and used anesthetics for the operations he performed. Surgeons, however, were not considered on so high a plane as physicians.

Historians agree that the Chinese were ingenious in developing the field of medical therapeutics. Moxa, cupping, cautery, massage and puncture were practiced as far back as the Stone Age. Wong and Wu say that the Neiching stressed "When the seat of the trouble is in the muscles employ puncture; in the blood vessels, use moxa; in the tendons, apply cautery."[4] In making punctures "needles" were used. These were made of flint originally but later were changed to metal as a result of improvements in the manufacture of instruments in the Copper and Bronze Age. These needles have been found in the country districts where another custom has been noted, using broken pieces of pottery instead of scissors in cutting the umbilical cord of newborn babies. Needling occupied a rather important position in

[4] *Op. cit.,* pp. 2–3.

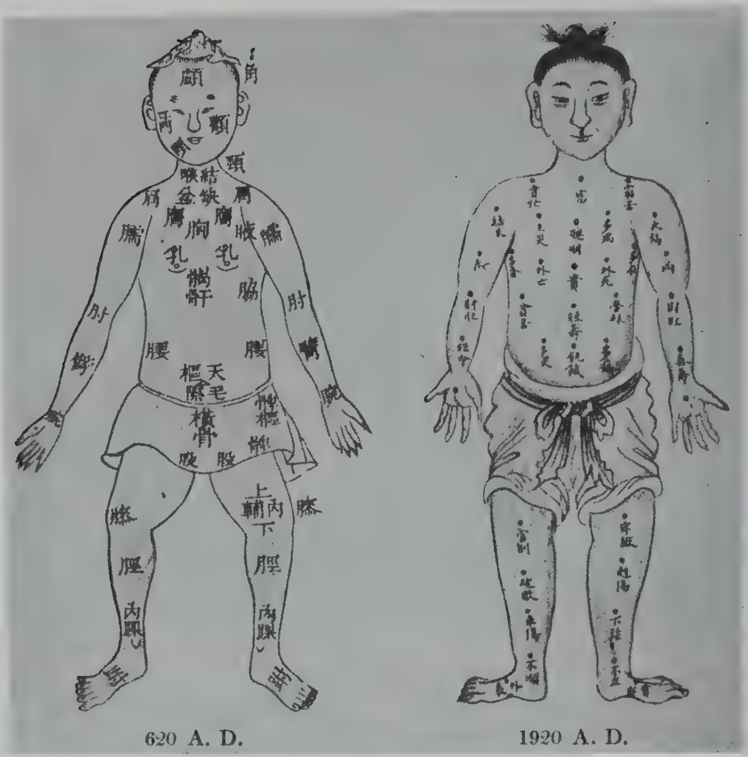

Figure 49. Chinese acupuncture diagram. (Courtesy of Dr. E. V. Cowdry, Peking, China.)

ancient times. It developed into the art of acupuncture. This highly specialized branch of Chinese medicine has been considered a universal panacea. *Acupuncture* has consisted of inserting needles for an inch or so with a twisting motion into an inflamed or painful area.

Massage evolved out of the natural impulse to rub, soothe and stroke an injured or painful spot. The Chinese developed this ability to an extraordinary degree and used a modern vocational rehabilitation method of employing blind masseurs.

Moxa, a very painful form of counterirritation, involved the application of ignited cones of mugwort to the skin. The smoldering fire burned the skin gradually, causing blisters to form.

Specific medicines and treatments were devised for prevalent diseases. Leprosy has been known from earliest times and chaulmoogra oil has been used in its treatment. Medicinal seaweed, rich in iodine, was mixed with bouillon to combat goiter. Animal organs such as liver and thyroid glands were used. The poppy gave up its precious content of opium because of the careful scrutiny of the Chinese. The herb, Ma Huang, was found to possess an important alkaloid, ephedrine. An ingenious method of extracting the potent medicinal value of herbs and drugs was accomplished in the *Chinese medicine cooker.* The herb or drug was placed in the center section of the cooker and around it was banked live charcoal, the heat releasing the beneficial properties.

Toads were used in the formation of plasters and were applied to carbuncles, boils, ulcers, sites of dog bites and inflammations of all kinds. The secretion of toads contains adrenalin.

"Spirits of hartshorn" (ammonia water) was another contribution of the Chinese.

Originally, spirits of ammonia was obtained by the destructive distillation of the horns and hoofs of animals and the resulting solution of the gas was known consequently as spirits of hartshorn.

The most famous herbal medicine is ginseng, a plant so rare and highly valued that it was reported recently as selling for more than $4,000 a pound.[5] It can be distinguished from similar vegetation only by its glow in the dark.

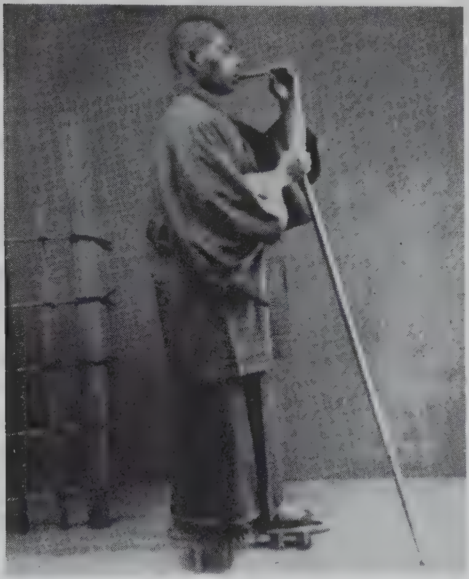

Figure 50. Blind man who performs massage blowing whistle as he goes through the street to announce his presence. (Courtesy of Peabody Museum of Salem, Mass.)

Other medicines that have remained popular through the centuries include ingredients of crickets, toad tears, snake, horn of a special rhinoceros from India or Nepal, lizards, seahorses, tigers' bones immersed in wine and many other substances.

The shell of the tortoise has been used for purposes of divination down through the centuries. The hollow undersurface was brushed with ink and turned upside down (convex side downward) over a flame until the ink coating dried and crackled into line patterns. These were interpreted by those who had special abilities to read the message of the spirits.

People in the East also recognized the value of moist heat. Hot mineral baths as well as burying patients up to their necks in hot sand packs were popular.

Drugs were carried in an *inro,* a box consisting of several compartments or sections, each one containing vials of medicine.

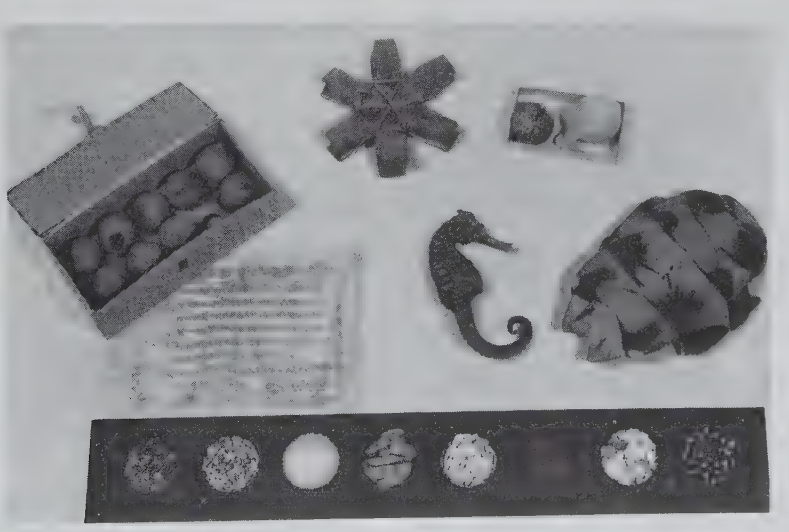

Figure 51. Exhibit of Chinese drugs. (Courtesy of Peabody Museum of Salem, Mass.)

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[5] Durdin, Peggy: "Medicine in China: a revealing story." *New York Times Magazine,* February 28, 1960, p. 76.

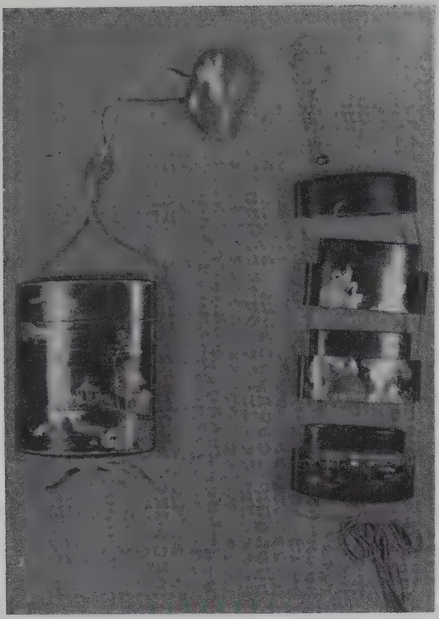

Figure 52. Two Inros—medicine boxes—one opened to show the drug compartments. (Courtesy of Peabody Museum of Salem, Mass.)

These were fastened to the belts of the medicine men.

Smallpox was described in the third century A.D. and a method of *vaccination* was devised. Smallpox scabs were ground into a powder and blown through bamboo tubes into the nostrils. Frequently the undergarment of a child afflicted with smallpox was worn by a healthy child for two or three days. Concomitant with the scientific advancement of smallpox vaccination was the superstitious practice of children's wearing very ugly masks to ward off the deity of smallpox.

Cholera has been a deadly plague from ancient times and China has suffered through many outbreaks of this feared disease.

One of the most outstanding Chinese contributions to the world is porcelain. The word porcelain comes from the Italian word "porcellana," meaning cowry shell, and is called porcelainware china. Winchester says "Europeans first became acquainted with porcelain when it was brought from China in the days of Marco Polo. As trade with the Orient developed from the 1500's on, porcelain was one of the exotic delights that Europeans most admired. Porcelain had been made in China for hundreds of years."[6] Not only are we grateful to the Chinese for the chinaware but also for the tea which they brewed by pouring hot water over tea leaves in a handleless bowl.

In studying the contributions of the ancient Chinese we are aware of the paradox of a deeply superstitious yet highly gifted and civilized culture which gave us valuable knowledge of drugs as well as other acceptable medical treatments. Many of these Chinese medical practices were adopted by the Koreans as well as the Japanese.

China's vast body of traditional medical lore has been one of the most ancient. Today, Chinese doctors receive educational preparation in this traditional aspect as well as modern scientific methods and practice, ancient as well as modern medicine.

CONTRIBUTIONS OF THE ANCIENT HINDUS

Ancient India occupied one of the southern peninsulas of Asia. Natural barriers of mountains and seas shut India off from the rest of the world and encouraged the growth of a culture peculiar to India herself.

As early as 2000 B.C. an Aryan band, the Hindus from the Iranian plateau, settled on the plains of India. They either subjugated the natives or drove them out into the mountains and desert plains, and by 1500 B.C. the Hindus had established themselves in the valley of the Ganges.

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[6] Winchester, Alice: *How to Know American Antiques.* New York, The New American Library of World Literature, 1952, p. 58.

The land of the Hindus has been a mysterious and exotic natural wonderland. Gold is present in the streams, the mines in the mountains hold such precious gems as rubies and diamonds, and pearls are furnished by the sea. In this atmosphere peacocks exhibit their broad tails of emerald, dark blue and gold. Elephants provide ivory; the goats supply wool for cashmere shawls; the musk deer gives perfume; the silkworm spins out threads of silk. Spices such as sandalwood and frankincense are added to the impressive list of natural products. Indeed it has been said that: "India was always the land of wonders, where fancy established her kingdom, where legend and poetry loved to tarry."[7]

Yet in this luscious land, between 1200 and 1000 B.C., the development of a *caste system* took root and still flourishes. The status of each person has depended on rewards or punishment earned in past life. The caste division has been organized as follows:

1. Brahmin, the priestly class, keep to their class the knowledge of prayers, ritual and sacrifices of religion since earliest days.
2. Warrior class, including rulers of the kingdom.
3. Merchants.
4. Laborers.
5. Outcastes or untouchables.

Between 1000 and 800 B.C. there was a struggle between the ruling class and the priestly caste for supremacy in India. Thence evolved the idea of Brahma, the eternal spirit, and the religion of *Brahmanism* (also called Hinduism) that has involved the ascent of the people to spiritual reward or punishment through regeneration or the transmigration of the soul. In the process of reincarnation it would be possible to ascend the scale from vegetable to animal to human or to reverse the process. This has been the national religion of India; its objective has been to achieve union with Brahma, and its law has acknowledged no god. A triad of deities occupied the central religious attention: Brahma, source and giver of life; Vishnu, the preserver; and Siva, the destroyer. Another favorite deity was the sun god.

The territory of the Jumna and Ganges Rivers is the Hindus' "Sacred Land" and every twelve years on certain days, selected by astrologers, religious Hindus come to these rivers to bathe and wash away their sins. When one feels the approach of death, it is that person's greatest desire to go or to be taken to Benares, a city on the Ganges, to participate in this religious bathing. At death, the bodies are placed on funeral pyres in Benares, cremated, and the ashes sprinkled on the Ganges.

Since this religion has advocated ancestor worship and reverence for animals, especially cows and monkeys, it has been a sacrilege to eat products from these animals. Hospitals were built to care for animals from earliest times.

The oldest scriptures of Hinduism are the Vedas (*ca.* 1500 B.C.) written in Vedic, the parent language of Sanskrit; these are the historical documents of India and are also of religious significance. The Hindus say that these four books, Rig-Veda, Yajur-Veda, Sama-Veda and Atharva-Veda, were given to Brahma originally. The Rig-Veda (*ca.* 1500 B.C.) contains suggestions for medical treatment by the use of herbs and incantations.

Two of the best-loved Hindu scriptures have been the Bhagavad-Gita (Song of God) and the Upanishads, a group of poetic dialogues on metaphysics written after the Vedas and largely commentaries on

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[7] Williams, Henry Smith: *op. cit.*, II, p. 488.

Figure 53. Temple of Dawn at Bangkok. Note the intricate detail of skilled craftsmanship.

them. The Upanishads endeavored to impart knowledge of ultimate reality.

Temples have been of importance in the life of the people of the East and they have been masterpieces of artistry. Contemplation and meditation have occupied much attention and there have been many followers of the monastic way of life.

Yoga has been a method of "yoking" of an individual's soul to the Supreme Being. This mystical experience of spiritual detachment from one's surroundings has involved certain exercises. Bodily purity, attained by purgation and bathing, was followed by concentration of thought on one subject with the purpose of excluding worldly thoughts. The values of certain yoga postures, breathing exercises, breath control, concentration as well as relaxation have been noted by medical authorities and Christian leaders in recent years.

By 552 B.C., Buddha, "the enlightened one," had commenced to preach his doctrines and thus evolved *Buddhism.* This religion offered a chance to escape the consequences of Brahmanism by suppressing one's desires, and culminated in the negation of existence. It has not thrived in India but does exist in modified form in such countries as Tibet, China and Japan. *King Asoka* of India (269–237 B.C.) became a convert to Buddhism, but he was unsuccessful in fostering its acceptance on a permanent basis. He has been credited with the construction of hospitals, especially for pilgrims.

There were two renowned physicians in ancient India, Charaka and Susruta. Both of these men collected medical information into a compendium or samhita. *Charaka,* the second century A.D., presented in a clear, understandable fashion the ethical standards required for those who cared for the sick. Volume I, section xv of his samhita emphasized that the men who were nurses should be "of good behavior, distinguished for purity, possessed of cleverness and skill, imbued with kindness, skilled in every service a patient may require, competent to cook food, skilled in bathing and washing the patient, rubbing and massaging the limbs, lifting and assisting him to walk about, well skilled in the making and cleansing of beds, ready the patient and skillful in waiting upon one that is ailing and never unwilling to do anything that may be ordered."

Susruta, who lived about the fifth century A.D., described diseases, medicinal plants, procedures relating to surgery and about 121 different surgical instruments. Some of the ones mentioned were scalpels, lancets, scissors, saws, needles, forceps, catheters and syringes. Limbs were amputated; the hemorrhage was checked by cauterizing with boiling oil and pressure. Operations performed were caesarean sections and the removal of cataracts. The Indians were

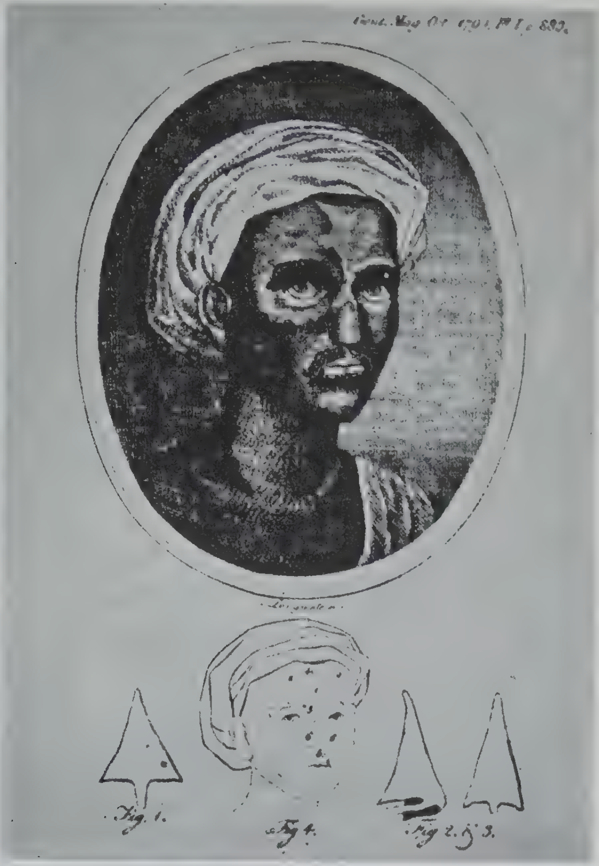
Fig. 1.
Fig 4.
Fig 2. & 3.

Figure 54. Indian rhinoplasty showing details of the technique of nasal reconstruction.

skilled especially in such plastic surgery as skin grafting and rhinoplasty (or nasal reconstruction). The need for this latter type of surgery arose out of the custom of amputating the nose as a form of punishment. According to Susruta, a surgeon would cut a leaf of a tree to the size of the missing nose, apply this pattern to the cheek and cut a piece of skin of the same size. This tissue was sewed then to the stump of the nose. To facilitate breathing a tube was inserted into each nostril.

The method of teaching students of surgery is presented most interestingly by Garrison:

> Realizing the importance of rapid, dexterous incision in operations without anesthesia, they had the student begin by practising upon plants. The hollow stalks of water-lilies or the veins of large leaves were punctured and lanced, as well as the blood vessels of dead animals. Gourds, cucumbers, and other soft fruits or leather bags filled with water, were taped or incised in lieu of hydrocele or any other disorder of a hollow cavity. Flexible models were used for bandaging and amputations and the plastic operations were practised upon dead animals. In so teaching the student to acquire ease and surety in operating by "going through the motions," the Hindus were pioneers of many recent wrinkles on the didactic side of experimental surgery.[8]

Another reason for this careful practice might have been the custom that if a doctor caused injury to a patient he was compelled to pay a fine.

Many diseases such as diabetes and tuberculosis were described, as were the transmitters of certain diseases, such as rats in plague and mosquitoes in malaria. To forestall the spread of malaria, Marco

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[8] Garrison, Fielding: *An Introduction to the History of Medicine.* Philadelphia, W. B. Saunders Co., 1929, p. 72.

Polo described the Hindus' use of mosquito netting. Vaccination was employed to prevent smallpox, and the narcotic effects of certain drugs such as hyoscyamus and cannabis indica in surgical anesthesia was noted.

There has been a resurgence of interest in the Ayurvedic medicine and many aspects of this type of medical care have been taught with so-called modern scientific methods. Several herbs which have been mainstays in the medical regime of the medicine man have become modern discoveries in other parts of the world. One such old-time remedy prescribed by ancient Hindu medicine men for hysteria and nervousness was the plant rauwolfia from which is extracted the modern drug reserpine, popularly known as a tranquilizer.

In the 1600's India surrendered to the British. Many of the previous customs were forbidden by the British and gradually disappeared due to legislation. Several of these customs pertain to women of India. The Sarda Act, passed by Indian Legislature in 1930, penalizes marriages unless the wife is fourteen years of age, although child marriages from the age of eight are noted. Another undesirable custom is known as *purdah:* this is the custom of keeping girls in seclusion and is an unhealthy practice from the standpoint of social, physical and mental health. *Suttee,* or the burning of a widow on her deceased husband's funeral pyre, as well as the practice of throwing infants into the Ganges, has been forbidden. *Time*[9] magazine published an article describing the rite of suttee practiced by an Indian widow.

The untouchables (numbering about sixty million people) have been treated with aversion by the members of the castes because of supposed sinfulness in their prior existence. Such treatment of these poor souls was attacked by Mahatma Gandhi and is now unlawful.

In the area of teaching methods and surgery the ancient Hindus left their greatest contribution to medicine.

CULTURE OF ANCIENT GREECE

The records of ancient Greece are intertwined deeply with such legends as one finds in Homer's *Iliad* and *Odyssey*. A combination of facile pen and vivid imagination was believed responsible for these epic poems until the archeologist Professor Schliemann (*ca.* 1876) excavated the site and possessions of ancient Troy and brought a sense of reality to the well known tales.

Greek legends extend from *ca.* 2000 B.C. and reveal a relationship with the previously mentioned Cretans and the Hittites,[10] whose cultural evidence is being brought to light by the spades of archeologists at the present time.

The physical geography of ancient Greece, or Hellas as the Greeks called their homeland, was very nearly like that of present-day Greece. The deep coastline indentations and the towering mountains of the peninsula with its many islands all contributed to separate rather than unite the Greeks. This encouraged the establishment of city-states with local patriotism and customs.

The individuality of the Greeks is shown by the contrast between the Spartans and the Athenians. The former were stern, practical unimaginative people, more interested in developing the body than the mind and their education pointed toward making them strong, brave hardy soldiers.

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[9] *Time,* Nov. 1, 1954.

[10] The Hittite people once ruled an empire in what is now Turkey and Syria. It rivaled the empires of ancient Egypt and Babylonia. There are many Biblical references to the Hittites.

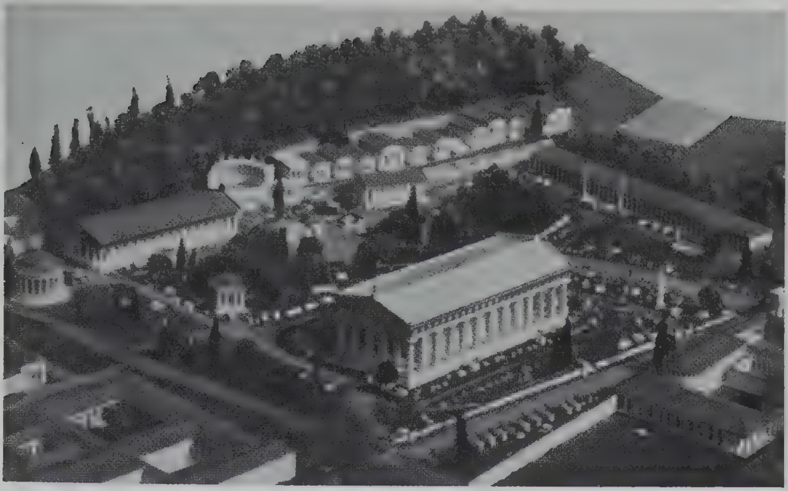

Figure 55. Model of Olympia in the second century B.C. (Metropolitan Museum of Art.)

The Spartan citizen belonged to the State; at seven, the boy left home and endured a very rigorous military preparation that extended until the age of sixty. When he was thirty years old, he was required by law to marry although he saw his wife and family very infrequently. Only the strongest of youths could survive this very rigid training; sickly youths or the physically or mentally handicapped ones were abandoned or left to be devoured by wild beasts. The Athenians, on the other hand, endeavored to develop the whole person, the body, esthetic faculties and the mind. They produced artists, historians, orators, and philosophers as well as soldiers.

Mrs. Putnam[11] in her book, *The Lady,* presents a vivid picture of the life of the female member of the Greek household. At birth a female baby was not received so enthusiastically as her brother; a dowry had to be accumulated and ultimately a husband selected for her. A perpetual minor in the eyes of the law, she was reminded that her chief function was that of producing legitimate heirs and directing her husband's house. If her husband desired, she could share his meal but could only supervise the preparation and serving of it if he were entertaining. The husband had the privilege of having minor wives or bondswomen.

The Olympic games furnished a unifying force for all Greece, for producing participants with healthy bodies was the aim of every family in Greece.

A pantheon of gods and goddesses furnished the Greeks' religious motivation, and a profound veneration for these gods was noted from earliest history. *Apollo,* the sun god, was the *god of health* and his son, *Asklepios,*[12] who may have been a human and deified after death, has been considered the *god of medicine.*

Asklepios has been represented as holding the staff of the traveler intertwined with the serpent of wisdom. The present-day medical symbol, the *caduceus,* is patterned after this representation. Two of the daughters of Asklepios are deities: *Hygeia,* the goddess of health, and *Panacea,* the goddess of medications.

The Greeks had implicit faith in the gods and before making important decisions consulted them at one of the Oracles. The shrine of Apollo at *Delphi* was one of the most famous Oracles. The gods were supposed to communicate their answers in one of four ways: (1) delivered orally by priests and priestesses; (2) made known by signs; (3) presented in the form of dreams; or (4) communicated directly with spirits.

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[11] Putnam, Emily: *The Lady.* New York, Sturgis and Walton Co., 1910.

[12] Asklepios is the oldest spelling. Asclepius is found more frequently than is the Latin form, Aesculapius.

Asklepios gave his counsel in the form of dreams which were interpreted in turn by the priests in the temple. One of the chief temples erected in his honor was *Epidaurus,* a famous medical center of Greece, which was similar to a very fashionable present-day health resort. The temple was an architectural masterpiece, built on a high

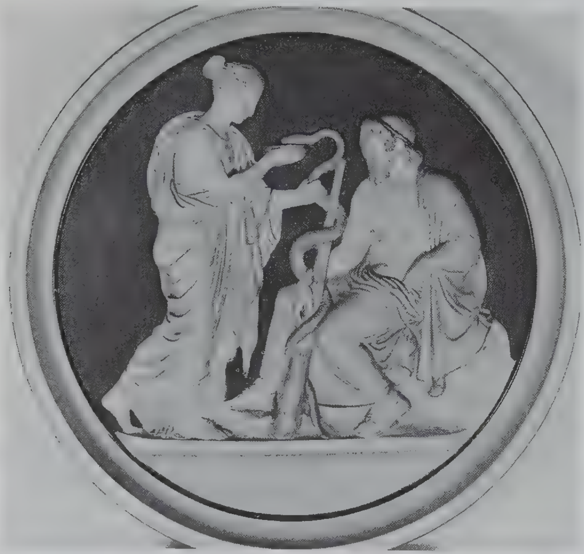

Figure 56. Aesculapius and Hygeia. This plaque is a copy of one by Thorwaldsen made in 1810. It represents Hygeia's offering some food to her father's serpent. (From author's collection.)

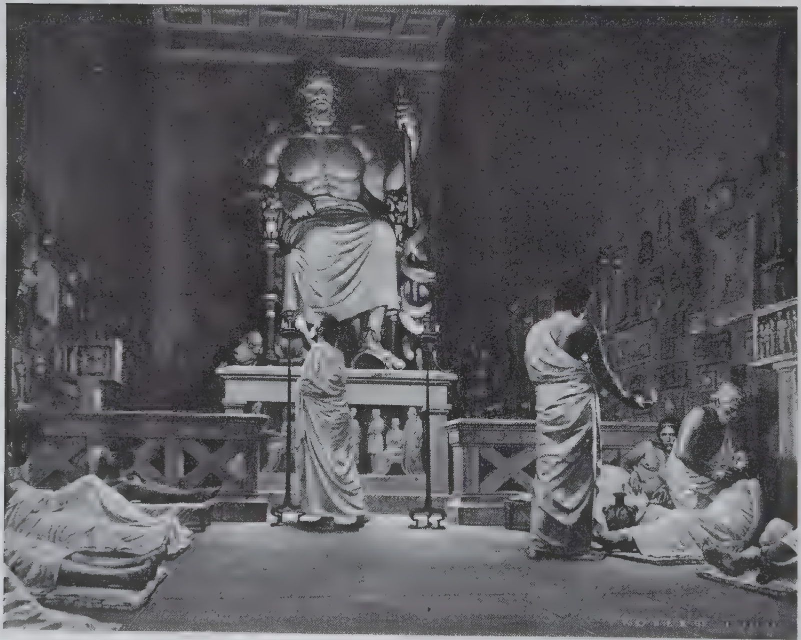

Figure 57. The temple and cult of *Asclepius.* © 1957 by Parke, Davis & Co.

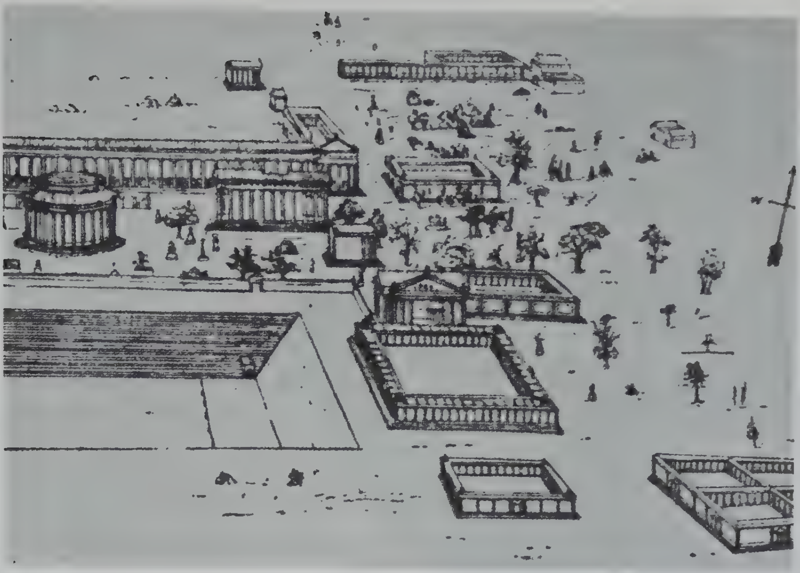

Figure 58. Perspective sketch of Epidaurus—largest of Asklepian health centers. (Courtesy of James J. Walsh; *Psychotherapy*.)

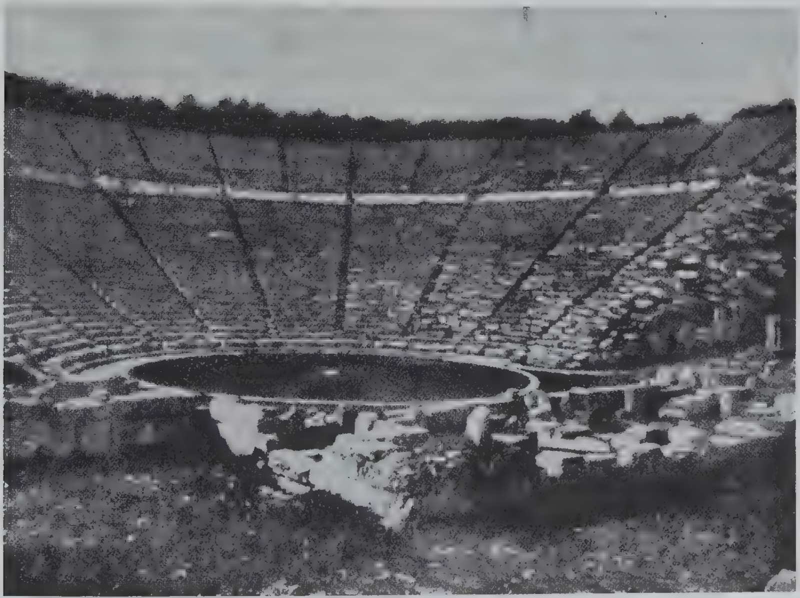

Figure 59. Theatre at Epidaurus *ca.* 330 B.C. The value of diversional therapy was recognized.

hill with a magnificent view. The grounds afforded scenic walks, an outdoor theater, gymnasia and baths of invigorating mineral waters. On arrival, the patient sacrificed an animal to Asklepios, received a purifying bath in the mineral spring followed by massage, and then went to sleep on one of the porches, surrounded by sweet odors and soothing music. Then he was supposed to drift into the *incubation* or *temple sleep*. The dream was to contain Asklepios' counsel which was interpreted then by the temple priests. The followers of this cult were called *Asklepiads.* Pregnant women and patients with incurable diseases were not admitted to the temples for medical assistance.

It is paradoxical that in these unscientific surroundings there emerged a distinguished leader who extricated the care of the sick from magic and superstition and imbued it with a scientific spirit. This leader, born on the island of Cos in the year 460 B.C., belonged to a renowned Asklepiad family and was referred to by Aristotle as "the great Hippocrates." *Hippocrates* deserves his title of *"Father of Medicine":* (1) by stressing that there is a *natural cause* for diseases he liberated the care of the sick from the influences of the mythical deities and magic; (2) by teaching *accurate observation* of the sick and keeping careful records of treatment he laid a foundation for clinical medicine; (3) by reporting unsuccessful as well as successful methods of treatment, a modern scientific approach was presented; (4) by emphasizing the importance of constant and skilled care at the patient's bedside he prepared the way for the position of the professional nurse (he dismissed the slave and insisted on his medical students observing and administering bedside care); (5) by instructing at

Figure 60. Temple of Aesculapius, ancient Greece. (From Bihet's *Histoire du Nursing,* Editions Desoer, Belgium, 1947.)

Figure 61. Hippocrates: Medicine becomes a science. © 1958 by Parke, Davis, & Co.

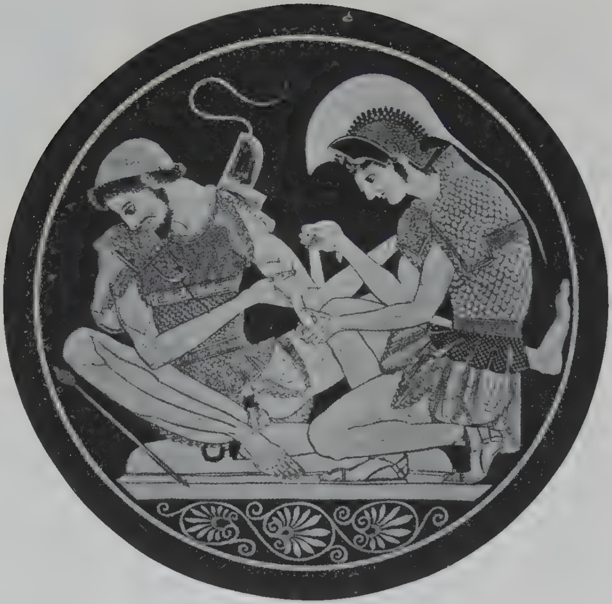

Figure 62. Vase painting 520–510 B.C. Achilles bandaging arm of his friend Patroklos. Arrow at left may have been removed from wound. (Courtesy of Metropolitan Museum of Art.)

the bedside, he demonstrated the value of clinical instruction by precept and by example; (6) by practicing the high ethical principles embodied in the Hippocratic Oath he laid the cornerstone of an excellent moral code for medicine.

Hippocrates' care of the sick was *patient-centered,* and he used the scientific method in the solution of the problems of his patients.

Aristotle, another famous natural scientist and an Asklepiad, though not himself a physician, contributed to the field of medicine. His inspiration came in the areas of botany, zoology, physiology, embryology and comparative anatomy, and he taught by dissecting animals.

In Greece the surgeon was regarded highly. Indeed, the *Iliad* mentions the presence of army surgeons and as the accounts of the wounds sustained in battle are read, the need of their skill is obvious. First aid was administered and the art of bandaging was depicted on one famous antique vase showing Achilles' bandaging the wounded arm of Patroklos.

The theory of the four elements—fire, air, earth and water—was advanced at this time. Bodies were thought to be composed of varying quantities of these four elements, and health resulted when a state of equilibrium prevailed. These four elements corresponded also to the four necessary qualities of heat and cold, moisture and dryness. This theory became the basis of the *humoral theory* which governed the thinking of medical leaders for many years.

We owe a debt of gratitude to the ancient Greeks for their gifts to us in the fields of philosophy, mathematics, astronomy, architecture, sculpture, drama, poetry, history, natural science and medicine. However, in a golden age of accomplishments, the field of nursing was the forced occupation of slaves.

Greece was the intellectual center of the world and continued to enlighten those people who attempted to enslave her.

The first of these conquerors was Philip II of Macedonia, the father of *Alexander the Great.* At Philip's death in 336 B.C., Alexander started on his career of conquest, becoming the ruler of all Greece in 338 B.C.

This period from 338 to 133 B.C. is referred to as the *Hellenistic Age,* since the conquered lands under Alexander the Great became Greek in culture and language; Greece herself, however, suffered an intellectual decline.

Alexander, who desired to rule the world, conquered Greece, Asia Minor, Egypt and Persia as far as India, and had himself designated as a god-king. *Alexandria,* on the Nile delta in Egypt, became the new capital of his world empire, and replaced Athens as the center of learning and culture. At Alexandria were located a thriving seaport with docks, lighthouses, rich palaces, a celebrated museum and an outstanding library from which shone a beacon of intellectual light, beckoning scholars from all over the world. In reality this was a university where the ancient manuscripts were studied and research was carried out in the arts, literature, physics, mathematics, astronomy and medicine. Medicine remained in the hands of the Greeks, and many outstanding leaders received an education here.

After Alexander's death, one of his generals, Ptolemy, succeeded him as ruler of Egypt, and the Pharaohs were called Ptolemies. The glory of the Alexandrian Empire was short-lived. Conquered by the Romans, who in 30 B.C. came to Egypt led by Octavius, the successor of Julius Caesar, the last Ptolemy ruler, the famous Cleopatra, committed suicide by allowing herself to be bitten by an asp. Thus ended the long story of ancient Egypt which became part of the Roman Empire.

THE ROMANS

Rome has been a kingdom, a republic, an empire and a city. About 753 B.C. Rome comprised a small section of land in the center of which was a hill with a few crude shelters. Four hundred and eighty years later it contained all of the peninsula we call Italy. By the second century A.D. Rome encompassed the territory we know as England, Spain, France, Switzerland, Austria, Hungary, Italy, Greece, Turkey, Sicily, North Africa and other smaller states and islands. At the present time it is the principal city of Italy.

The rich plains and vine-covered hills of sunny Italy were inhabited by four groups: the Gauls in the Po Valley; the Etruscans just above the Tiber; the Greeks in the southern section; and the Romans, who became the rulers of all, in the central portion.

The Romans borrowed much of their culture from Greece and other conquered countries. They worshiped a similar pantheon of gods and goddesses and built temples in their honor. In the ancient temple of Vesta, goddess of the hearth fire, the holy fire of the city was kept glowing by priestesses called Vestal Virgins. Ancestor worship was practiced and gradually the Romans inaugurated the custom of worshiping the emperors.

The Babylonian practice of examining the entrails of animals to foretell future events was adopted by the Romans, and the soothsayer was consulted freely. It was said that Alexander the Great would not embark on one of his exploits without the counsel of the soothsayer who used this same technique of *divination.*

In the early days of the kingdom the father was the ruler and master of his home, wife, property and possessions, and those of his sons and their sons. The girl of the family severed this paternal authority when she married and became subject to her husband. At this time the Romans were practical, hard-working farmers. Mrs. Putnam says of the Roman matron that she:

> enjoyed personal freedom, entertained her husband's

> guests, had a voice in his affairs, managed his house, and came and went as she pleased. In early days she shared the labours and the dangers of the insecure life of a weak people among hostile neighbours. It may not be fanciful to say that the liberty of the Roman woman of classical times was the inherited reward of the prowess of her pioneer ancestress, in the same way as the social freedom of the American woman to-day comes to her from the brave colonial housemother, able to work and, when need was, to fight.[13]

In the midst of the practicality and agricultural achievement there was noticed the beginnings of a growing leadership ability and organizational acumen on the part of a few. As the transition from kingdom to republic was accomplished, one is amazed at the urge for conquest of land, possessions and people, and the way in which this desire was brought to fruition. The motto "divide and conquer" was characteristic of the events in Rome.

A division in the populace of Rome was apparent with the wealthy becoming wealthier and the poor abysmally poorer. A summary of events at this time would include the exorbitant loss of lives through conquests; a decline in morals due to war; the replacement of simple living by luxurious living for the few; the infusion of Greek culture; the introduction of gladiatorial games; construction of luxurious baths; a decay in political circles and widespread unemployment and wholesale slavery.

The thirst for conquest was an insatiable one as the Roman Empire replaced the Republic. The deeds of Julius Caesar are remembered as are his famous words "Veni, vidi, vici" ("I came, I saw, I conquered."). When the fateful Ides of March in 44 B.C. ended Caesar's career, he was replaced by his nephew Octavius, who ruled the western section of the Empire, and Mark Antony, who accepted the eastern portion as his charge. Antony, who became enamored of Cleopatra, was considered a traitor to Rome and was defeated by Octavius at the Battle of Actium in 31 B.C.

Octavius, now called Caesar Augustus, became Emperor. During his reign peace was restored, industry flourished, roads were constructed, and a census of the whole empire was taken.

Emperors good and bad succeeded Octavius. Several of them must have been mentally ill for one notes the encouragement of paid spies, poisoning political enemies, wholesale murder, infanticide, persecution by burning and by being devoured by wild animals and finally a dictatorial government with a total absence of liberty.

The family as a unit was not a stable one. Marriages by civil contract were made easily and dissolved easily and divorce became a general practice.

Mrs. Putnam summarizes:

> The unfortunate reaction upon the Romans of their achievements is a commonplace of history. The best of them were reduced in numbers by centuries of constant warfare, and the survivors were assailed by those bacilli of civilization which always ravage a fresh race with a virulence unknown among the peoples that have become adapted to them. And the conditions that proved in the long run fatal to the noble Roman worked rapidly and perniciously upon his wife. With the introduction of slavery, what occupation the lady had was gone. She resigned the care of her house, the care of her children, the care of her person to Greek slaves who understood all these matters a great deal better than she did. The time that was left on her hands she filled with pseudo-activities of the nouveau riche. Through her efforts "society" was organized for the first time in Europe.[14]

In the area of entertainment, the famous Olympic games were replaced by the gladiatorial contests. These were games in which two slaves, frequently war prisoners, fought for their lives for the amusement of spectators. This sport soon lost its interest for the sadistic Roman society and to add zest to it, wild animals such as lions and tigers were introduced, the events becoming more and more inhuman.

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[13] *Op. cit.*, pp. 41–42.

[14] *Ibid.*, p. 50.

Finally, Nero introduced the persecutions of Christians. This mistreatment started to avert the accusations of many who believed that Nero was the cause of a raging fire that wiped out a slum area. By ruse, the emperor caused suspicion to fall on the innocent Christians and immediately condemned hundreds of them to die in the arena.

The value of the individual had fallen very low, and it is no wonder that the only *hospitals* of note were built for the *military*. Nursing homes, *valetudinaria*, were established for sick slaves, as slaves were considered valuable. Nursing was done by the slaves, while the practice of medicine was under the aegis of captured Greek physicians who were granted citizenship.

Asklepiades was one of the early Greek physicians to practice in Rome. He had an interesting theory that health was the balance between tension and relaxation. *Dioscorides*, another Greek physician who accompanied the Roman army and studied

Figure 63. The Colosseum (*ca.* 75 A.D.). (Courtesy Metropolitan Museum of Art.)

Figure 64. A Roman aqueduct. Water still flows through this aqueduct which continues to stand without benefit of cement or mortar. (Courtesy Metropolitan Museum of Art.)

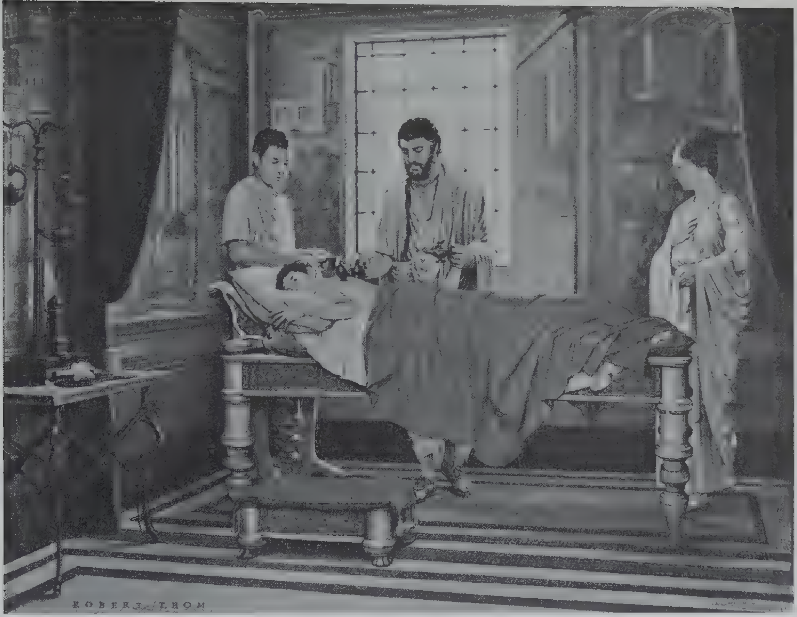

Figure 65. Galen: Influence for forty-five generations. © 1958 by Parke, Davis, & Co.

the action of drugs in the body, had a scientific attitude and recorded accurately what he observed.

Galen was the most renowned of the Greek physicians during this period and for many centuries to come. Born about 130 A.D. in the famous city of Pergamum in Asia Minor which had been colonized by Greek settlers, Galen had an excellent general and medical education for this period. His major contributions included the restoration of the famous works of Hippocrates for use in medical thinking and study; the addition of facts learned through careful dissection and observation of the structure and function of the bodies of animals; the selection, use, and method of compounding drugs, many of which are referred to as "galenicals"; and voluminous works used for the teaching of medical science for many centuries after his death in 201 A.D.

Aurelius Cornelius Celsus, who lived during the reign of Tiberius Caesar, is the one to whom we are most indebted for leaving an accurate account of the importance of Greek physicians in Roman medicine. He was a loyal admirer of Hippocrates. Though not a physician himself, Celsus' treatises have proved that he was conversant with the field of medicine and the work of the practitioners. In 1478 A.D. his well known work *De Re Medicina* was one of the few medical books to be printed. The *De Re Medicina* was a compilation of eight books which gave a comprehensive picture of the practice of medicine of Celsus' time.

Celsus wrote the first organized medical history which has become one of the great Latin classics. He translated works from Greek into Latin, and it was Celsus who described the four cardinal symptoms of inflammation—redness, swelling, heat, and pain—as *rubor et tumor, cum calore et dolore.*

His writings included the dietary aspects as well as pharmaceutal, medical, surgical, and psychiatric. Forms of therapy which he recommended were sea voyages, change of scene in the form of trips, moderate exercise, light, massage, and warm baths.

The beneficial contributions of the Romans were in the fields of engineering, public health, sanitation and law. *Aqueducts* were built to supply the city with water from mountain springs many miles away. This water was carried in pipes through the tunnels and across lowlands. Marshes were drained, a sewage system was established and plumbing was introduced into the houses, with the new public baths becoming quite fashionable.

The Baths of Caracalla in Rome were expansive, palatial, and costly. Covering acres of land, they accommodated thousands of persons in the most grandiose manner. The spacious interior had high arched ceilings and was ornamented beautifully with marble and exquisite inlaid mosaics. There were auditoria, gymnasia, reading rooms, patios with cool fountains, soft music and swimming pools

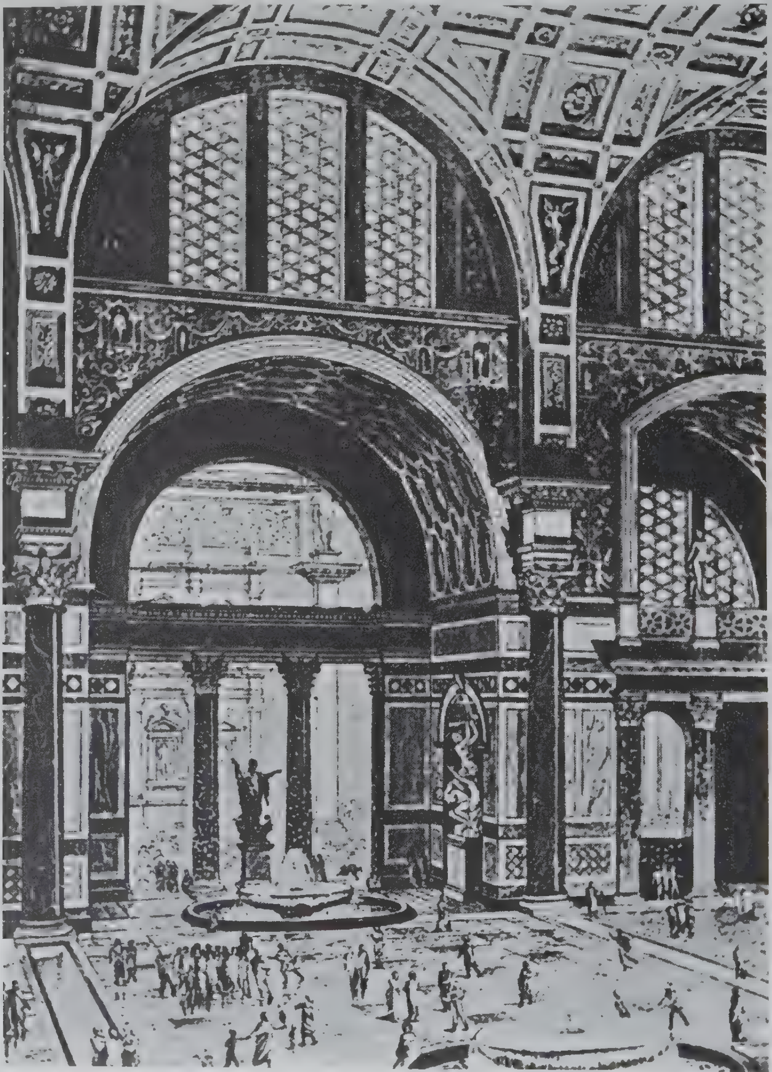

Figure 66. Reconstructed baths of Caracalla.

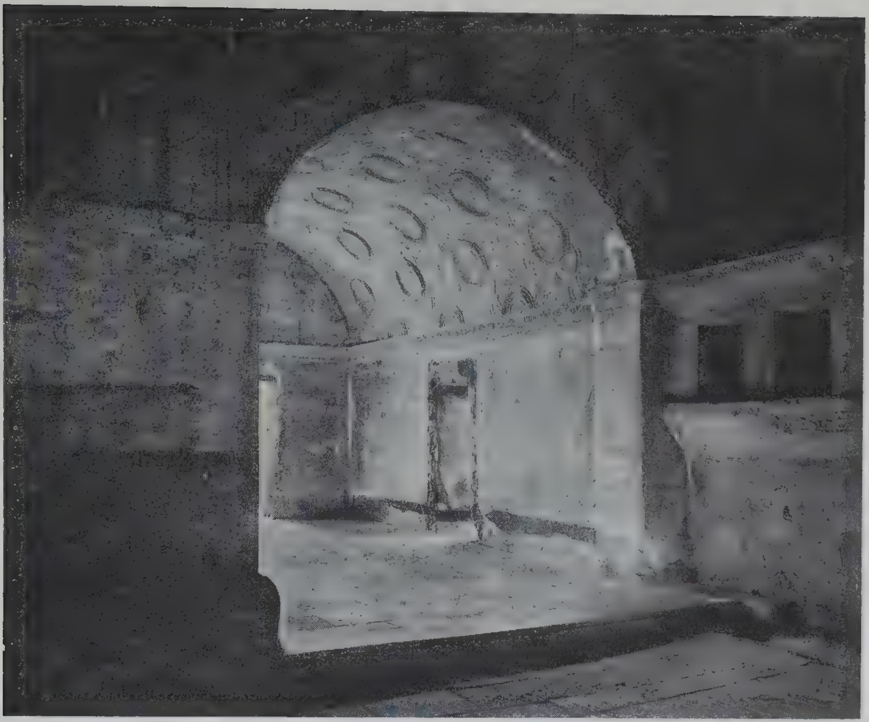

Figure 67. The Stabian Baths, Pompeii (Roman—first century A.D.).

to delight the patrons and provide diversional therapy.

For the therapeutic tour of the baths, a person undressed in the apodyterium and received massage; the warm refreshing waters of the tepidarium were next; increasingly warmer water was provided in the sudadorium; followed by the hot bathing in the calidarium; the final scene occurred in the cold waters of the frigidarium.

The heat of the baths was controlled in the basement beneath the floor where open hearth furnaces manned by slaves sent the heat through a flue system and lead piping to the pools above. In the frigidarium the clear, cold water came from the well established aqueduct system. These remarkable and luxurious baths (186–217 A.D.) were named for Caracalla, the emperor who was purported to have ordered the mass murder of 20,000 people.

The sun was so important in Greek and Roman philosophy of living that Apollo and Helios were revered as sun-gods. Heliotherapy (sun bathing) was used in classical times and Caelius Aurelianus advocated its use for the treatment of rickets, for diseases of bones and joints, and skin ailments.

A large swampy section of land was drained by a great arched sewer called the Cloaca Maxima which emptied into the Tiber River. The land became the basis for the foundation of the famous Roman Forum, the public market place. It was so well constructed that it has withstood the ravages of time and is used today.

It is possible to visit and view the actual setting of a community approximately 2000 years old. In 79 A.D. the famous eruption of Mt. Vesuvius occurred. Twenty-four hours later, as the sun shone brightly, the two adjacent cities of Herculaneum and Pompeii had vanished from the face of the earth. Herculaneum was embedded in lava but a lighter substance of small

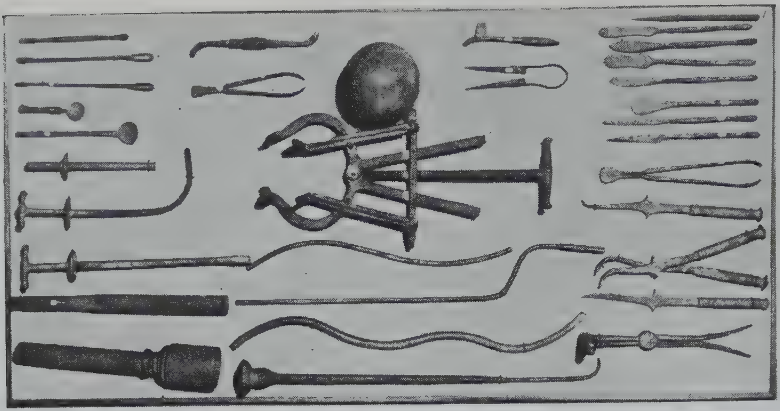

Figure 68. Pompeian surgical instruments. (Courtesy Howard Dittrick Museum, Cleveland, Ohio.)

stones and cinders covered Pompeii; both cities and their occupants became nonexistent. About two hundred years ago excavations started[15] and the life and living that was interrupted instantaneously was found to be preserved in a most unbelievable manner. Even a surgeon's office was found with his bronze instruments intact.

The shell of Rome, long decayed from within, was conquered easily in 476 A.D. by barbarian invaders, the Goths, the Vandals and the Huns, and thus was brought to an end the mighty empire of Rome.

CONTRIBUTIONS OF THE ANCIENT IRISH

Ireland was a highly civilized country as early as 1000 B.C. The story of its early beginnings is embellished with interesting legends and sagas. Ireland has been called Hibernia by the Romans, Ireland by the Norsemen, and Erin and "the Emerald Isle" by affectionate countrymen.

The Gaelic-speaking Celts were the early inhabitants of this country and were famous for their love of beauty. The well known Irish brogue is of historical significance: when the Irish discontinued the use of the native language and adopted English, they used the mode of English pronunciation of the Elizabethan and Jacobean period which has been exemplified in Shakespeare's writings.

It is a matter of record that when the Roman spirit was decaying and the light of civilization was waning, the Irish preserved it and contributed to it inspiring works of literature and poetry, melodious music and gorgeous examples of art. The Irish maintained a real interest in Latin and Greek, and were intrigued by Greek philosophy as well as Greek literature.

An occasional example of Roman influence was noted, even in relation to pagan deities. One such was Sirona. Most of the inscriptions present her as a Celtic goddess of health worshiped during the time of the Roman occupation. Her major accomplishment was as a source of sunlight and warmth and was connected in some way with that of Apollo. Her specialty was presiding over healing springs and hydrotherapy.

In pagan Ireland there were three learned orders: the *druids,* the *brehons* and the *bards.* The druids studied physical and theological science and possessed knowledge of divination and magic. The brehons were lawyers, while the bards were poets and preserved much of the fascinating history and traditions of the country.

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[15] An excellent presentation of this can be found in Ceram, C. W.: *Gods, Graves and Scholars.* New York, Alfred Knopf, 1952, pp. 3–10.

Ireland was one of the early countries to be converted to Christianity. Missionaries went forth from Ireland not only to spread the doctrines of Christianity but to disseminate the knowledge which had been preserved by them. Walsh quotes Mrs. Alice Stopford Green, the daughter of a distinguished professor of English literature and the wife of a historian of the English people, who said:

> No church of any land has so noble a record in the astonishing work of its teachers, as they wandered over the ruined provinces of the empire among the pagan tribes of the invaders. In the Highlands they taught the Picts to compose hymns in their own tongue; in a monastery founded by them in Yorkshire was trained the first English poet in the new England; at St. Gall they drew up a Latin-German dictionary for the Germans of the Upper Rhine and Switzerland and even devised new German words to express the new ideas of Christian civilization; near Florence one of their saints taught the natives how to turn the course of a river. Probably in the seventh and eighth centuries no one in western Europe spoke Greek who was not Irish or taught by an Irishman. No land ever sent out such impassioned teachers of learning, and Charles the Great (Charlemagne) and his successors set them at the head of the chief schools throughout Europe.[16]

Irish missionary efforts also extended to the "New World" and Herrmann[17] refers to the legends of the Irish Saint Brendon who lived during the sixth century and is purported to have come to America. Over and beyond these stories of the probable existence of Irish missionaries in America, evidence of Irish culture in the form of beehive huts have been found in Salem, New Hampshire.[18]

In 1955 archeologists of the Early Sites Foundation, working under the direction of Professor Morrison of Dartmouth College, started research excavations; the results of these excavations will be of interest to the student of history.

A university was started by Saint Patrick at Armagh in the fifth century which drew many students from Europe and the shores of the Mediterranean.

The Irish were tender-hearted people and because of the clan system under which they lived, provided dutifully for the needs of the less fortunate. In 300 B.C. in Ireland Princess Macha built a hospital called Broin Bearg or the House of Sorrow.

The Irish were advanced in medical treatments and in the establishment of laws regulating the practice of medicine. In the area of medical treatments, they recognized the benefits of *moist heat.* Hot compresses, hot water baths, medicated baths and "sweating houses" are mentioned frequently; this is understandable in a damp climate in which "rheumatism" is said to have been prevalent.

Many modern aspects of patient care have been noted in early Irish history. For example, they emphasized the importance of peace of mind for the benefit of patients. This was achieved by careful scrutiny of the patient, and persons and things that did not contribute to the welfare of the patient were excluded from the sick room.

Trephine operations, as observed in the story of an Irish prince, were performed. Due to a severe blow on the head, the prince had lost his memory and physicians resorted to a trephine operation. However, not only was a portion of the skull removed but some of the cerebral material as well. The prince was said to have lost his "organ of forgetting" as a result of the operation, and his memory was restored.

In a twelfth-century Celtic *materia medica,* reference is made to the use of mandrake which was to be used before operations to prevent pain. By this it is seen that the ancient Irish were acquainted with anesthesia for surgical purposes.

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[16] Walsh, James J.: *The World's Debt to the Irish.* Boston, The Stratford Co., 1926, p. 18.

[17] Herrmann, Paul: *Conquest by Man.* New York, Harper & Brothers, 1954, part 6, pp. 174, 215, 236.

[18] Perry, Clay Willard: *Underground New England.* Brattleboro, Stephen Daye Press, 1939.

The early *obstetrical* practices of the Irish are fascinating and significant in the light of current trends in this field. It was an Irish practice to encourage a mother to deliver her baby while in a kneeling position. A feather mattress (burned after delivery to prevent the spread of infection) was rolled up and the mother knelt on this and leaned against the portion in front of her, helping herself by exercising as she grasped and pushed during the process of labor. The mother's muscles had been kept in good condition by housework and work in the fields. The birth process was not considered a pathological event but rather a normal physiological experience. A physician was not in attendance at the birth, but rather a "wise-woman" or the mother of the one who was having the baby was present.

The Irish mother was out of bed by the third day and back to her chores by the fifth. She took care of her baby in a hammock arrangement on her bed which permitted her to meet the needs of the newborn. These people were, then, the forerunners of a "rooming-in" method of baby care.

The practice of medicine was regulated by well constructed *brehon laws.* One of these laws required that every physician in Ireland keep one door of his house open at all times. The physician's house was to be an open house into which injured and sick might be brought for treatment.

Every physician was expected to permit four medical students to reside in his home. The physician's duties included teaching these young men as he demonstrated the medical care of patients. It is imagined that this prompted doctors to put forth their best efforts as an example to the students. Medical fees were regulated according to the service given to the patient and to his ability to pay.

The laws against impostors or people not properly prepared to practice medicine were very strict ones. The Irish felt that those who were ill could be easily deceived, and anyone who took advantage of this "susceptible" state of mind was punished severely:

> If an unlawful physician treat a joint or sinew without obtaining an indemnity against liability to damages and with a notice to the patient that he is not a regular physician he is subject to a penalty with compensation to the patient.

Every doctor was held responsible for the treatment of his patients. The brehon laws required that the physician refund fees if he had failed to heal a patient. The patient could use the money to try and find someone who could cure him.

Finally, the law of "sick maintenance" required that provision be made for all who needed curative treatment, nourishing food and a place of care. The persons who were responsible for carrying out these needs were defined clearly and carefully.

The status of woman in Ireland was high. She had legal rights to property, and Irish literature refers to the reverence with which she was treated. One of the outstanding pioneers in the education for women was St. Brigid of Kildare, to be discussed in the section on monasticism.

In summary, the Irish were praiseworthy for their great literature, beautifully illustrated books, exquisitely made jewelry, originality in music and especially for their forward strides in law and medicine.

In pausing to review the achievements and contributions of the ancient cultures, we note that the Sumerians, Babylonians and Egyptians practiced medicine governed by a code imbued with magic principles and did not pursue a scientific quest for the cause of disease; that the Hebrews bequeathed to us a good foundation in hygiene, sanitation and preventive medicine; that the Chinese laid a firm basis upon which to build the science of pharmacol-

Figure 69. Page from Lindisfarne Gospels, famous Celtic illuminated work of art. (Before 721.) (University Prints. British Museum, London.)

ogy and therapeutics; that the Hindus gave inspiring leadership in the field of surgery; and that to the Greeks we owe medical leadership in the theory and practice of clinical medicine and clinical instruction. However, we notice also how much artistic skill and material wealth accompanied primitive superstition with its lack of medical progress, ruthless brutality and total indifference to the value and equality of the individual man created to the likeness of God. Is it any wonder then that nursing was the forced occupation of slaves?

Aids to Enrich an Understanding of This Period

I. Visit museums containing exhibits featuring the contributions of ancient civilized cultures.
II. Construct dioramas depicting phases of the care of the sick in various ancient civilized communities.
III. Compile a collection of pictures on: "Care of the Sick in Art;" "Women's Dress through The Years."
IV. Assemble specimens of postage stamps representative of historical events and personalities entitled "Ancient Cultures in Philately."

V. Add to the scrapbook an account of famous personalities in this period.
VI. Prepare an illustrated historical map collection for the ancient civilized cultures.
VII. Compose a piece of prose or poetry to summarize the notable personalities, customs and events that stress the evolution of medical progress through the primitive and ancient civilized cultures.
VIII. Plan a chart listing readings in literature giving authors, setting and plot that relate to events and personalities in this era.

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IV

Influence of Christianity

JESUS CHRIST

Even after nineteen hundred years it is difficult to fully comprehend the impact of the birth of *Jesus Christ* and His teaching on society and the care of the sick. This teaching stressed the need of loving God and one's neighbor; it was a simple philosophy of living a life of love in a pagan world of selfishness and hatred. He was expected; His birth had been announced by prophecy. His coming resulted in the cleavage of time between those events which preceded His birth and those which have followed.

It was shortly after Christ began His public life that He preached His Sermon on the Mount, the key to His entire message to us. Christ saw in every man, even in the poorest and most miserable, a human being whose privilege it is to become a member of the kingdom of God. His miracles testified to His love, and His attitude towards the sick was a good example in human relations. Instead of "saying the word" and healing the sick, Christ gave individual attention to the needs of all by touching, anointing and taking by the hand. The least gesture of human kindness is noted by Him, even a cup of cold water given in His name does not pass unrewarded. Each act of kindness and charity is of value since each is done for Christ in the person of the distressed. For from the moment that Christ counseled, "Amen, amen I say to you, as long as you did it to one of these my least brethren, you did it unto me," all followers of the healing arts have been given an opportunity to see Christ in their patients and thus to minister to Him.

At the Last Supper Christ gave to His disciples His final instructions, including this commandment: "A new commandment I give you, that you love one another: That as *I have loved you,* you also love one another."[1] This commandment of love was called *new,* and indeed it was, for the world before Christ's coming was a world without love. The object of His coming was that of love, since He explained, "the Son of man came not to be ministered unto, but to minister, and to give His life as a ransom for many;" and before His

[1] John 13:34–35 and 15:12–13.

Figure 70. Christ, the Healer. (Courtesy of Maryknoll.)

death, He said, "Greater love than this no man hath that he lay down his life for his friends."

Many historians have recorded stories of the social and spiritual leadership of the Christians as they began to follow in Christ's footsteps. Tertullian wrote:

> It is our care of the helpless, our practice of loving kindness that brands us in the eyes of many of our opponents. "Only look" they say "how they love one another! Look how they are prepared to die for one another."

Eusebius, describing a plague in the time of Maximinius Gaza, said:

> . . . the Christians were the only people who amid such terrible ills, showed their fellow-feeling and humanity by their actions. Day by day some would busy themselves by attending to the dead and burying them; others gathered in one spot all who were afflicted by hunger throughout the whole city and gave them bread.

This charity was apparent in the inception of nursing which took root, flourished and expanded into the well established field we know today. For nursing was nurtured in the early Christian period, and nurses have continued to contribute to our historical heritage ever since. Indeed, there were individuals of this period who

Figure 71. St. Veronica. (University Prints. Memling, *ca.* 1430–1495, St. John's Hospital, Bruges.)

will be recorded for all time for their example in comforting the afflicted. Solicitously Veronica wiped the agonized face of Christ, and Mary Magdalene and St. John gave genuine consolation to His Mother.

DEACONESSES

Visiting nursing, the forerunner of the public health nursing movement of today, had its beginning in the first century of the Christian Church. Human suffering had elicited a warm response from individuals down through the years, but the first organized visiting of the sick began with the establishment of the order of *Deaconesses.* They endeavored to practice the *Corporal Works of Mercy:* "feeding the hungry, giving water to the thirsty, clothing the naked, protecting the stranger, tending the sick, and visiting the prisoner." Truly, they were inspired, for they were following the command of their Master and imitating Him who spent His life ministering to those in need.

There must have been a pattern of organization based on a district plan. The objectives of their service were the provision of care for the sick in their home as well as the distribution of aid to the needy.

The early Christians sold what they possessed and gave to the poor. In their thinking "charity" was synonymous with "love." The Church became the central charity organization because there were no other organized charities from which to obtain clothing, food, and other necessities. The deaconess, therefore, in distributing the food and medicines which she carried in a basket, the visiting nurse's bag of that period, was the forerunner of the social worker and the public health nurse. She detected needs and brought the thinking and material resources of her group to the patient who needed this care.

The care given by the deaconess probably consisted of bathing patients, especially those who had communicable diseases and were feverish; dressing wounds, including the applications of dressings to burnt areas; giving foods and forcing fluids; bringing physical and spiritual comfort to all patients, especially to the dying. In this era, the emphasis of the care was on relieving suffering rather than curing or preventing illness. The benefits of scientific progress were lacking, but there was an overflowing of love, charity, and tenderness. Home remedies (such as herbs, minerals, diet, bathing, and, where possible, fresh air) were relied upon.

The marvels of structure and beauty of wealthy Rome have been portrayed all too well, but the deaconesses and the Christian Roman matrons carried out their duties in the slum sections of the empire. The abysmal poverty of the citizenry has been mentioned and it was in this setting that these women labored to bring relief to the suffering and depressed. These patients had little of the necessities and were crowded into small tenement areas where little fresh air was available, and much sickness, sorrow, want, misery, and distress were present.

Phoebe, a friend of St. Paul, was the first deaconess and thus the first visiting nurse. From the Bible we have learned that she was entrusted with the letters of St. Paul,[2] and he said of her, "For she also assisted many and myself also."

The writings of St. John Chrysostom, the Bishop of Constantinople, described the activities of another deaconess, *St. Olympias.* The daughter of a count of the Roman Empire, Olympias inherited an immense fortune when her parents died during her childhood. She married and held a position of social prestige as the wife of the prefect of Constantinople. Left a childless widow at the age of eighteen, Olympias erected a convent in which a large number of relatives and friends devoted themselves to works of charity and the service of God. Her servants were freed and given the opportunity of joining her convent as sisters.

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[2] St. Paul to the Romans 16:1, 2.

The Order of Deaconesses attained a position of importance for many years but gradually died out.

MATRONS

A group of noble *Roman matrons* distinguished themselves in the field of nursing. These were women of wealth, intelligence and social leadership who, having been converted to Christianity, founded hospitals and convents and worked for the good of others.

St. Helena, mother of Constantine, the ruler of the Roman Empire, embraced Christianity and dedicated the remainder of her life to the needy. She gave generously to the poor and built shelters and churches for the pilgrims who were determined to visit the "Holy Places." Helena is believed to have found the relics of the true Cross, and has been credited with the establishment of a house for the aged called a *gerokomion.*

Empress Flacilla, the wife of Theodosius the Great and the daughter of Claudius Antonius, the Prefect of Gaul, went to the hospital daily to attend the sick. There, she washed and dressed the patients, made their beds, prepared food, and served them when they were unable to eat. The empress was interested especially in assisting persons with a physical handicap.

St. Marcella converted her luxurious palace on Aventine Hill into a monastery. A

Figure 72. St. Helena. Cima Da Conegliano (*ca.* 1459–1517). (Samuel H. Kress Collection. Courtesy National Gallery of Art, Washington, D.C.)

scholar, Marcella encouraged other Roman matrons of intelligence and spiritual depth to join her in studying Latin and Greek literature, Hebrew and the Scriptures. Of her keenness of mind St. Jerome has written, "All that I have learnt with great study and long meditation the blessed Marcella learnt also, but with great facility and without giving up any of her other occupations or neglecting any of her pursuits." Marcella taught the care of the sick to her followers, and her conventual plan encouraged further education for women. Indeed she might be considered the first nurse educator. Marcella was killed by barbarians during the sack of Rome.

St. Fabiola was one of the most charming, popular and capable members of Marcella's group. She belonged to the patrician family of Fabian and had led a very worldly life, but due to the influence of St. Jerome and Marcella she gave up her earthly pleasures and lavished her immense wealth on the poor and sick. Through her efforts the first general public hospital was built in Rome. Not content with giving her fortune to the needy, Fabiola waited on the patients herself giving special care to those with repulsive sores. She died in the year 399, and her funeral was a manifestation of the gratitude of her patients and of the people of Rome.

Figure 73. Fabiola. (J. J. Henner, 1829–1905, Louvre Museum.)

St. Paula was the daughter of the Gracchi and the Scipios, of the line of Agamemnon, and her possessions included the city of Necropolis built by Augustus. This great wealth held no appeal for her, however, and largely due to the efforts of Marcella, she was converted to Christianity, and entered the monastery on Aventine Hill. Paula was one of the most learned women of this period and a scholar of Hebrew. She assisted St. Jerome (who encouraged each woman to develop her mind through reading and study while in-

Figure 74. St. Jerome with St. Paula and St. Eustochium. Samuel H. Kress Collection, Zurbaran (1598–1664). (Courtesy National Gallery of Art, Washington, D.C.)

Figure 75. St. Sebastian (c. 288) Nursed by St. Irene. By George De La Tour. (French 1593–1652; Courtesy of Detroit Institute of Arts.)

creasing her skills in caring for the sick) in his Latin translation of the Scriptures, known as the Vulgate. Accompanied by her daughter, Eustochium, Paula sailed for Palestine about 385 and settled in Bethlehem. On the road to Bethlehem she built shelters for pilgrims and hospitals for the sick.

St. Jerome provided the inspirational leadership behind the activities and contributions of these Roman matrons. His great spiritual depth was accompanied by a love of learning and an ability to motivate and teach others. One of the early Church Fathers who was well known and respected, St. Jerome had studied law and was famous as a pleader.

In the selfish, indifferent society of Rome the remarkable contrast of these matrons in caring for the sick and less fortunate was strikingly apparent. It was most unusual for women of high social standing to change from a life of luxury to one of generous service. It was gratifying also to note that high intellectual ability accompanied the practical skill and loving-kindness of these women in nursing. Love was the motivating force for these early Christian women. Fired with the enthusiasm of converts, anxious to lay down their lives for their newly acquired faith, channeling this spiritual growth into the outpouring of love for their neighbor, they showered their attention on the sick and needy so that in ministering to the least of these their brothers they would be ministering unto their Lord.

Members of a brotherhood known as *Parabolani* provided an opportunity for male nurses in the early Church period. This brotherhood was organized supposedly during the great plague in Alexandria which occurred in the second half of the third century. This group undertook to care for the sick and bury the dead.

Concerning the activities of the *parabolani,* Miss Austin has presented the following account taken from *Hypatia,* a historical novel by Charles Kingsley:

> So Philammon went out with the parabolani, a sort

> of organized guild of district visitors. . . . And in their company he saw that afternoon the dark side of that world whereof the harbor panorama had been the bright one. In squalid misery, filth, profligacy, ignorance, ferocity, discontent, neglected in body, house and soul by the civil authorities, proving their existence only in aimless and sanguinary riots, there they starved and rotted, heap on heap, the masses of the old Greek population, close to the great food-exporting harbor of the world. Among these, fiercely perhaps, and fanatically, but still among them and for them, labored those district visitors night and day. And so Philammon toiled away with them, carrying food and clothing, helping sick to the hospital, and dead to the burial; cleaning out the infected houses—for the fever was all but perennial in those quarters—comforting the dying with the good news of forgiveness from above, till the larger number had to return for evening service. He, however, was kept by his superior watching at a sick bedside, and it was late at night before he got home, and was reported to Peter the Reader as having acquitted himself like "a man of God," as, indeed, without the least thought of doing anything noble or self-sacrificing, he had truly done, being a monk.[3]

Figure 76. St. Luke. Seventh-century catacomb wall painting, at the underground Basilica of St. Felix and Adauctus, Rome. (Courtesy of "What's New.")

PHYSICIANS

One of the best known doctors of this period is *St. Luke,* the Evangelist, who was a native of Antioch and a Greek. Called the "beloved physician" by St. Paul, Luke's writings indicated interest in medical aspects and gave evidence of medical preparation. Several historians suggest that Luke may have studied at the famous school at Tarsus, the rival of Alexandria and Athens, and that he could have met St. Paul there. As a physician Luke traveled extensively and may have been a doctor on board ship. In addition to his literary ability and medical skill, Luke was a noted artist.

St. Cosmas and *St. Damian* were twin brothers, Arabs by birth and Christians by upbringing, who specialized in the twin professions of medicine and pharmacy. They practiced the art of healing in Asia Minor, attaining an enviable reputation until their careers came to an abrupt end through the persecutions of the Emperor Diocletian. Two other doctors who were martyred during these persecutions were *St. Blaise,* a bishop, and *St. Pantaleon,* the personal physician of Emperor Maximian.

In 312, during the battle of the Milvian Bridge, Emperor Constantine saw a cross in the sky and the words, "In hoc signo vinces" ("In this sign thou shalt conquer"). Winning the battle, Constantine became a Christian, officially recognized the Church, and freed it from persecution. Consequently, the Christians no longer had to confine their activities to the catacombs, and hospitals, churches and other institutions began to develop.

HOSPITALS

From the moment the significance of Christ's teaching penetrated the thinking of the early Christians, special places were

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[3] Austin, Anne L.: *History of Nursing Source Book.* New York, G. P. Putnam's Sons, 1957, p. 62.

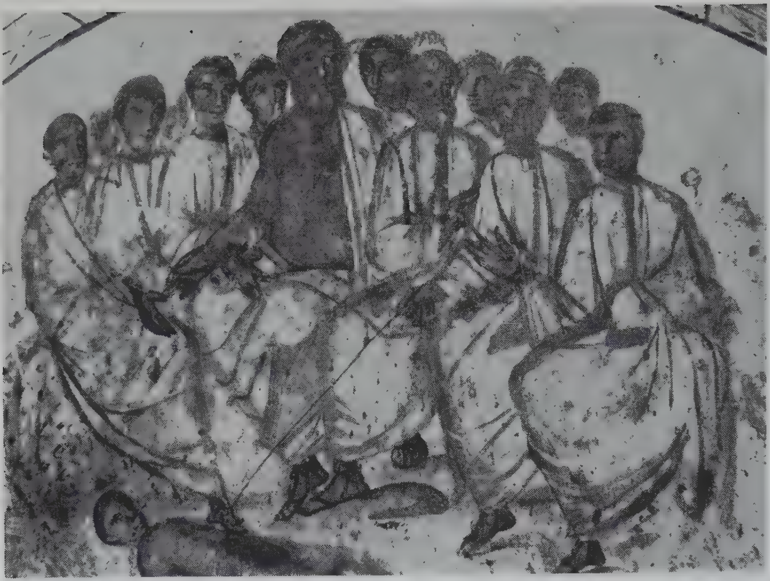

Figure 77. Fresco from recently discovered catacombs near Appian Way. This is a scene of a fourth century medical class. The instructor and students are listening to the discussion of one of the students. (Courtesy of Rev. Antonio Ferrua, S. J., Pontifical Commission of Sacred Archeology.)

set aside in their homes for hospitality and the actual care of the sick. These were called *Christ-rooms,* showing a literal interpretation of the words of Christ, ". . . I was a stranger and you took me in. . . ." These rooms, whether in the home of a bishop, deaconess or other person, were called *diakonia. Xenodochia* was the name given to shelters built for sick and poor pilgrims, while *nosocomia* was the name given to hospitals built especially for the care of the sick.

Hospitals began to be constructed, and one of the earliest was built by St. Zoticus in Constantinople during the reign of Emperor Constantine.

A hospital planned only for the sick was organized at *Edessa, ca.* 350, to provide care for the victims of a frightful epidemic. With money given to him *St. Ephrem* bought 300 beds and provided care for the critically ill. It is said that he assisted in the care of these sick patients. Later this hospital became the clinical center for a famous medical school.

One of the most famous hospitals of this period was the *Basilias,* built in Caesarea by *St. Basil* and his sister Macrina, both of whom are reputed to have studied medicine. The Basilias was not only a hospital as we know it but was also an institution which cared for the crippled and the poor. There was a separate building for children, another for elderly people, a place of hospitality for strangers and a building for the care of patients with leprosy. St. Basil included a special unit where the physically handicapped could learn a new trade and thus reenter society equipped with the ability to support themselves.

The motive behind the construction of such a hospital is interesting to consider. In the beginning, the plan of religious life was organized on a community basis. One of the first to draw such a group together was St. Basil. When St. Basil gave his monks a scheme for their community life, he established hospitals and schools at the gates of the monasteries. This arrangement was instituted because Basil saw the

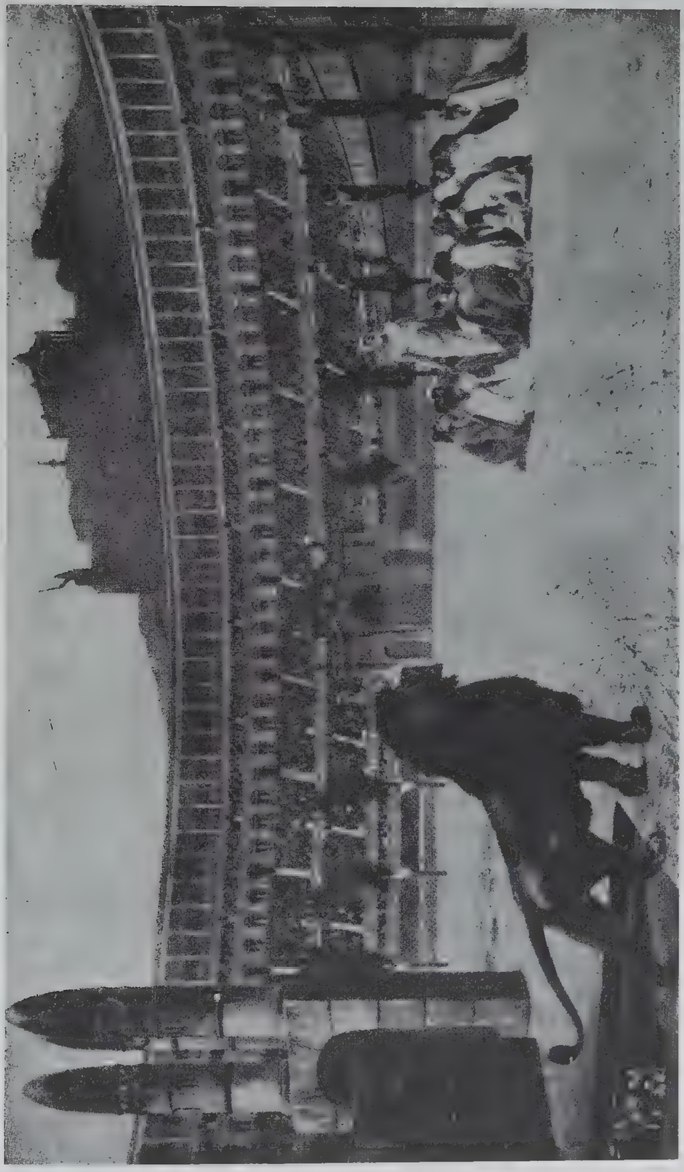

Figure 78. The Christian martyrs. (Gerome, 1824–1904.)

dangers of the monks' being preoccupied with their own salvation and as hermits concerned solely with themselves in their relation to God; his novel plan provided for both the care of the sick and the practice of the monks' religious duties. In this way he proved that the love and service of God must be extended to the love and service of one's neighbor. From that time on, nursing, like education, has been part of the religious life and has been one of the principal ways of practicing the worship of God.

In summary, with the coming of Christ and the subsequent advent of Christianity, the value of the individual was emphasized, and the responsibility for recognizing the needs of each individual became apparent. Many were inflamed with the fire of Christ's love and the virtues of sympathy, generosity and service were practiced. The social position of nursing was elevated, and its spiritual aspect was presented during this period.

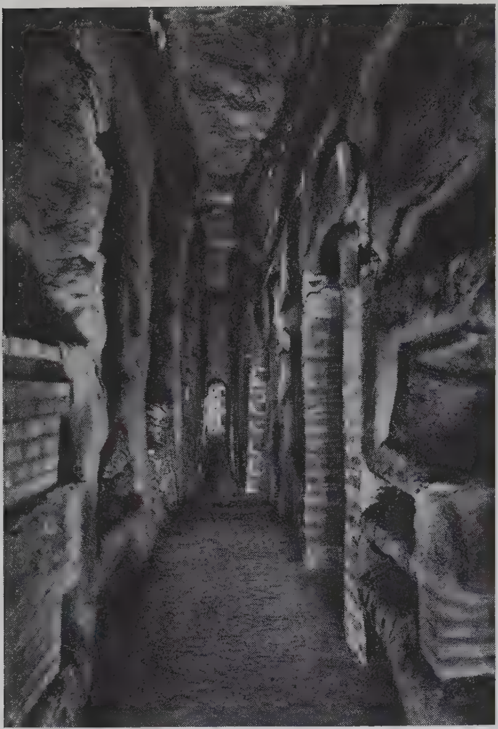

Figure 79. Catacombs of St. Callisto (third century). (Courtesy Pontifical Commission of Sacred Archeology.)

Aids to Enrich an Understanding of This Period

I. Design a series of posters depicting the "Teachings of Christ."
II. Dress dolls to represent the early Christian leaders of nursing.
III. Compile a collection of pictures on "Christianity in Art."
IV. Assemble postage stamps stressing the influence of "Christ and His Teachings."
V. Include candidates from this period in your Album of Famous People—this might comprise a literary and/or an artistic sketch.
VI. Mention current novels whose settings are laid in the early Christian period.
VII. Construct a diorama of an early Christian hospital.

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V

Early Middle Ages

The ancient classical civilization was crumbling rapidly, and an era of restoration and reconstruction was supplanting it. The thousand years that followed the collapse of the Roman Empire, referred to as the medieval period of history, have been subdivided further into the early and later Middle Ages.

As the study of the early Middle Ages commences, a deteriorating world is viewed. Everything was falling into ruins. Population was decreasing both in numbers and in strength. Contributions in art, science and industry were no longer apparent. Crime waves of an indescribable nature terrified the populace. The burden of increasing taxation and the brutality that accompanied the collection of taxes were insufferable; the already hungry and impoverished people were threatened with torture and imprisonment in the hope of extracting concealed possessions. Whenever an increase in tax rate was announced, agonizing murmurs arose from the people who, in desperation, considered the possibilities of fleeing the country, selling loved ones or even attempting suicide. Many relinquished their freedom and offered their services to a landowner in a bondage relationship. In reality, a great many were becoming slaves.

Paradoxically, while this malignant social disease was ravaging the Roman Empire and causing internal decay, the men of that period were unaware that they were living in a perishing world. The hordes of *German tribes* surrounding the territory were awaiting the moment when the glories of Rome would fall a prize to them.

These German people were grouped into many tribes which lacked definite organization, as each had its own ruler. Nine German tribes prominent at this time were the Angles, Jutes, Saxons, Lombards, Burgundians, Vandals, Ostrogoths, Visigoths and the Franks.

The German, who had intelligence as well as the elements of a strong moral character, was able to put aside his own religion, embrace Christianity, and adopt the arts and sciences which Christians had perfected.

Ulfilas, a Gothic bishop who lived early in the fourth century, invented a Gothic alphabet and devised a written language for the Germans. Then he translated the Bible into their own tongue; a fragmentary copy of the Bible of Ulfilas, written in silver letters on scarlet parchment, is kept in the library of the University of Uppsala in Sweden.

Another powerful force was that of the Huns. These were short men with mongoloid features who were excellent horsemen. Their presence was noted about the third century B.C., and the Great Wall of China is said to have been built to restrain them. They appeared in Europe in the fourth century A.D. With Attila (*ca.* 433–453) as their king and leader they pushed the Germanic tribes before them, thus precipitating the great waves of migrations that would destroy the Roman Empire.

Rome fell in 476 during the invasion of these barbarian tribes from the north. The next centuries revolved around restoring and reconstructing a civilization to replace the ancient one. Disorganized society found protection and a central form of government under feudalism, monasticism, and Islamism.

FEUDALISM

This was a system of social organization based on ownership of land. The owner of the land assigned portions of it to warriors in order to gratify their desires for independence and at the same time insure their allegiance. The one who gave this feudal grant was either the king or a feudal lord referred to as the liege. The vassal was the one who received the land, and liege and vassal were bound together by mutual obligations.

The liege was obliged to defend the vassal from attack, to treat him fairly and to see that he obtained justice when dealing with others. The vassal, who took an oath of fealty (act of homage), pledged his fidelity to the liege and was obliged to render military service whenever he demanded it. The vassal aided in the administration of justice and gave financial aid to the feudal lord whenever needed.

Instead of granting the entire territory to vassals, the feudal lord kept in his own hands a part of it for farming. This domain

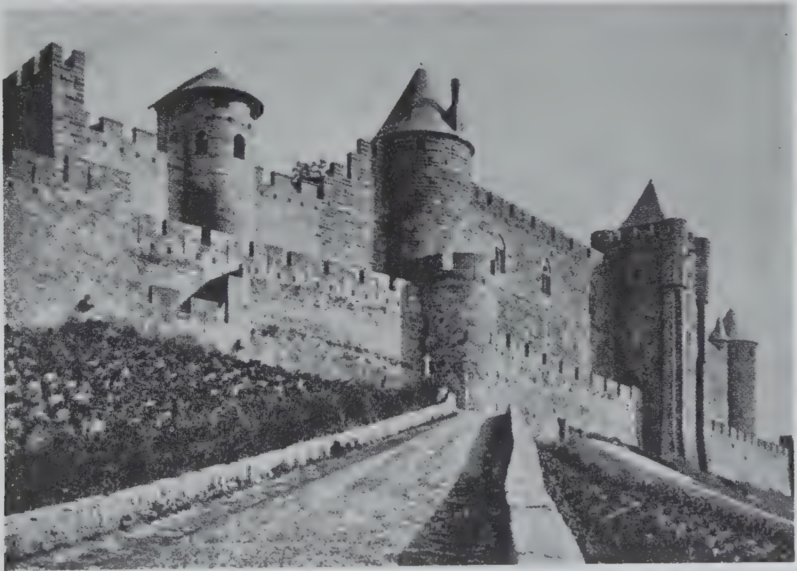

Figure 80. A feudal castle with strongly fortified walls and many watch towers. A drawbridge over the moat was also a part of the feudal fortress. (Courtesy Metropolitan Museum of Art.)

was rented to serfs who paid him in labor or by giving him a part of the crops. These payments were the main support of the feudal family.

The castle of the feudal lord was a strong stone fortress usually set high on an inaccessible spot. It was enclosed by massive turreted walls and encircled by a moat. Before the entrance was a cleverly operated drawbridge that spanned the moat. The most important fortification of the castle was called the keep which was the innermost tower within strongly constructed concentric walls. It was here that protection was secured in times of stress.

The noble's wife had charge of the household, and it was she who took care of the sick and wounded.

The atmosphere of the life of the feudal family seemed to encourage the growth of the spirit of chivalry which came eventually to mean the institution of knighthood. *Chivalry* represented the spirit of "noblesse oblige" which required the nobly born to protect and defend the weak.

Figure 81. A knight. (Leoni, 1531–1609. Courtesy Museum of Fine Arts, Boston.)

At the age of seven, the son of a noble went to the castle to live and learn the gracious practices of chivalry. He was called a page until the age of fourteen when he became a squire and the personal attendant of a knight; at the age of twenty-one he was eligible to become a knight.

Although feudalism afforded protection to many, the system had two major disadvantages: a strong central government was not possible and constant warfare prevented progress.

MONASTICISM

Monasticism offered an opportunity for men and women to live a good Christian life while pursuing an occupational career of their own choosing.

Christianity had been spreading continually and winning new enthusiastic converts. The members seemed aglow with the fire and energy of conversion and were desirous of becoming voluntary prisoners of love, where, away from the distraction of worldly surroundings, they could concentrate on the salvation of their souls. Monachism, the formal consecration of one's self to God, appealed to them. This monastic idea is not found in Christianity alone; it has been found in connection with many other religious groups. Monasticism was noted after the death of Christ when small groups banded together in independent units on a conventual plan, such as Marcella had organized.

A well established form of monasticism still flourishing is the order of Benedictines founded by *St. Benedict*. Benedict of Nursia was born of noble parents in 480. He was sent to Rome for his basic schooling and while there was repelled by the moral corruption around him. In disgust he fled to

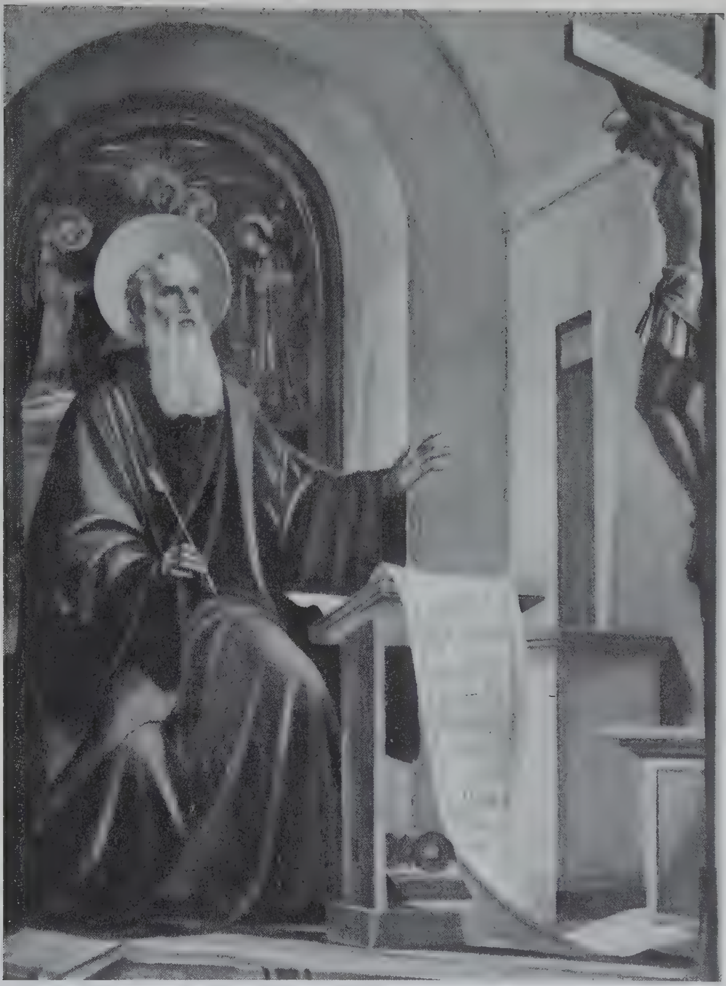

Figure 82. St. Benedict composing his rule (Dom Agostino Saccomanno, Monte Cassino Abbey).

the woods of Subiaco to meditate and pray. During his three year retreat he achieved remarkable spiritual maturity and complied with the invitations of other monks to organize a monastic family. He became their abbas or father from which the title abbot is derived. About the year 528 he composed his Rule and undertook the foundation of the Monastery of Subiaco in the Sabine Hills near Rome.

His most famous monastery was *Monte Cassino,* built on a rugged mountain top between Rome and Naples, probably in the year 529. This monastery, built on a former stronghold of paganism—one of the temples of Apollo—received great publicity when it was seized by the Nazis as a stronghold and bombed by the Allied forces during World War II.

Other famous Benedictine monasteries include the one at Fulda in Germany which became world famous under the direction of Abbot Maurus (776–856). This erudite abbot had studied under Alcuin (the teacher of Charlemagne) at the Benedictine Abbey at Tours in France. Abbot

Figure 83. Monte Cassino Abbey. (Dom Agostino Saccomanno, Monte Cassino Abbey.)

Figure 84. Inner Cloister of Monte Cassino Abbey. (Dom Agostino Saccomanno, Monte Cassino Abbey.)

Maurus compiled a medical encyclopedia *Physica,* which had a German-Latin glossary of anatomical terms.

The Benedictine monastery of St. Gall in Switzerland (*ca.* 720) became a school of medicine. A ground plan dating back to 820 indicates the presence of a pharmaceutical garden and a pharmacy. A wing contained six beds for the sick and private quarters for the physician in charge.

The rule of St. Benedict brought a stability and a scheme of organization to an age where chaos and panic reigned. In this period when men fled to the wilderness in large numbers to practice severe forms of penance, Benedict stressed the need of moderation, of fruitful labor, of discipline. His well known precept, *Ora et labora* (pray and labor), has been a guidepost for many Christians through the centuries. He loved the spirit of work, using hands, head and heart. Peace and charity were so important to the Benedictines that they used as their watchword *Pax.* In this atmosphere of peace, love and productive activity, the family spirit was cultivated, for the needs of the community were to be furnished within the monastery walls. Career opportunities were fostered to meet the growing demands of the community. As workshops of all sorts were erected, the need for teachers was apparent and the monasteries became centers of learning. Not only did the monks engage in practical skills, but they cultivated gardens and prepared medicinal drugs, studied music and languages, copied and illuminated precious manuscripts, and wrote poetry and drama as a few of their activities. Actually the monks were scholars, thinkers, librarians and teachers, as well as artisans and farmers. It was the duty of the monk to do for others and share with others, so these centers of activity offered hospitality and shelter to the homeless, medical care to the sick and refuge to the persecuted. In addition, the monasteries equipped each person with the knowledge and skills necessary to provide him with a means of livelihood.

The *care of the sick* was an important part of the community life, and one of the rules of St. Benedict stressed that the abbot, who was in charge of the monastery, should arrange for an infirmary. The rule states: "The care of the sick is to be placed above and before every other duty, as if indeed Christ were being directly served by waiting upon them. It must be the peculiar care of the abbot (or abbess) to see that they suffer from no negligence. The Infirmarian must be thoroughly reliable, known for his piety, diligence and solicitude for his charge."

One of the famous monks of Monte

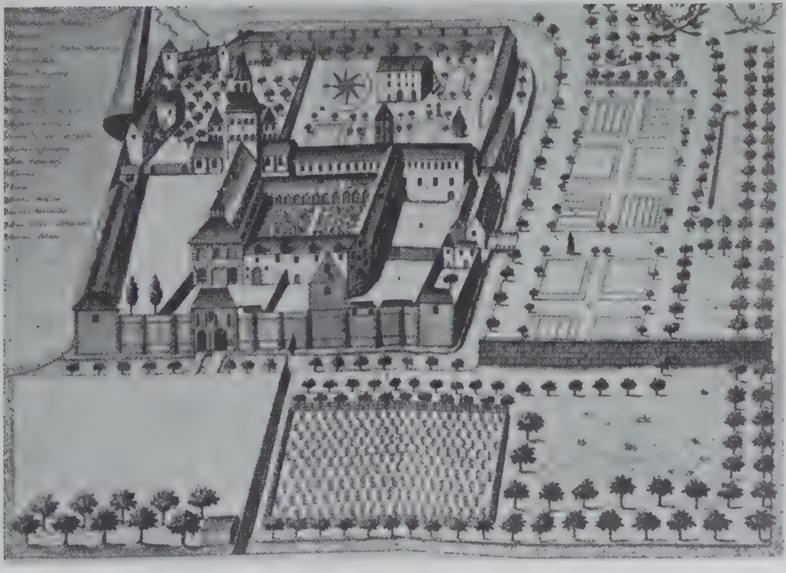

Figure 85. A Benedictine abbey. The abbey was built around an open court called a cloister. (Courtesy Metropolitan Museum of Art.)

Figure 86. The medieval scribe. (Edward Lanning. New York Public Library.)

Cassino was *Constantinus* (1018–1087), an Arab, who was born in Carthage in Roman Africa. Converted to Christianity early in life, he traveled extensively throughout the East making a special study of Arabian medicine and medical writings. He had been motivated by the scholar Gerbert (who later became Pope Silvester II) to translate the Arabic writings concerning Hippocrates and Galen into Latin for European learning. He accomplished this translation after he had entered the monastery of Monte Cassino. Constantinus received encouragement to further his pursuit for medical learning from the Abbot Desiderius (who became Pope Victor III), for both the Abbot and Constantinus had taught previously in the medical department of the School of Salerno.

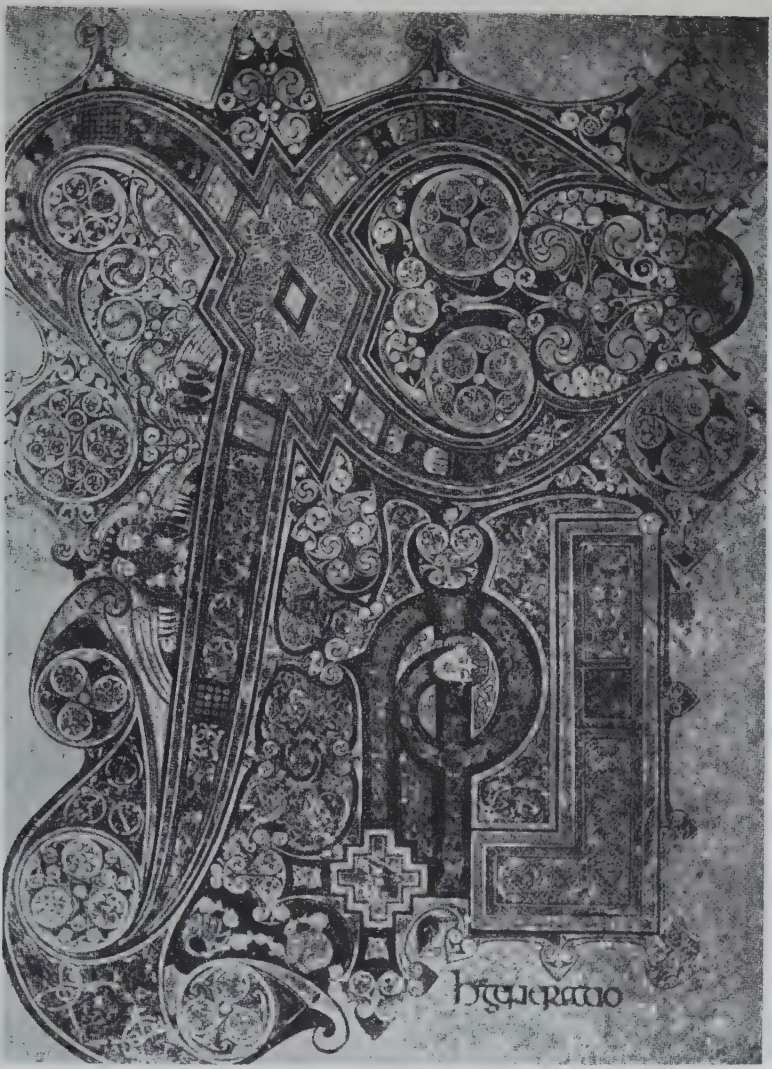

Figure 87. An example of Celtic illuminated art from the Book of Kells. (Early ninth century.) (University Prints, Trinity College Library, Dublin.)

Shakespeare's portrayal of the monk and his knowledge of medicine is not a figment of his imagination but a true portrayal of the monk in history. Friar Lawrence in *Romeo and Juliet* represents a survival of the fact that from the monastery gardens were derived the sources of plants, herbs and minerals used for healing. We are aware that the monks used a combination of mandrake, hyoscyamus, opium and wild lettuce to induce a state of narcosis in which the patient was insensible to pain. Friar Lawrence suggested that Juliet be placed in such a state "which shall appear like death." Well known tales have been related of travelers who were refreshed and given first aid by the monks of a hospice.

In a center where the care of the sick occupied such an important place, it is understandable that medical knowledge and skills would be developed and re-

Figure 88. St. Brigid. (Courtesy Isabella Stewart Gardner Museum, Boston.)

corded. The monasteries became centers of medical education and research, for, as Nutting and Dock state:

> The highest degree of practical medical skill with understanding was found among the Benedictines, who, excelling in all pursuits requiring intellectual labour with practical application, exercised a more specially intelligent interest in matters relating to medical and surgical relief.[1]

The monasteries fostered an opportunity for women to pursue a career in which they could satisfy their intellectual and spiritual aspirations and contribute to the needs of others. Many of the women who desired conventual life were gifted with qualities of leadership; the abbesses were skilled executives.

St. Brigid of Kildare was a famous abbess in Ireland and a distinguished scholar, counselor, educator and leader in the healing arts. Under her guidance the monastery at Kildare became well known for its culture as well as for its spirituality and was, in fact, an institution of higher learning for women. Brigid founded schools for children and taught in them herself. In fifth century Ireland, when leprosy was an incurable scourge and lepers were free to roam, they came in droves to Kildare to be bathed and treated by Brigid.

Manuscripts have been preserved and illuminated exquisitely in these monas-

Figure 89. St. Scholastica by Vivarini (1450–1499). (Museum of Fine Arts, Boston.)

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[1] Nutting and Dock: *A History of Nursing.* New York, G. P. Putnam's Sons, 1935, I, 154.

teries. One of the best examples of these is the world-famous Book of Kells, which can be seen in the library of Trinity College in Dublin.

St. Scholastica, the twin sister of St. Benedict, founded an order for women based on his Rule. This Benedictine community for women was started near Monte Cassino, and Scholastica held the office of abbess. Many other famous women of the Benedictine family have contributed in the field of nursing.

St. Radegonde, ca. 519–587, a German princess and the daughter of a Thuringian king, was a deeply religious, cultured and beautiful girl who had deep sorrow in her life. In her infancy her father was murdered by her uncle; as a young girl she was carried off by Clotaire, the Frankish king of Neustria, when he subjugated her country. She was forced to marry Clotaire, become his queen and was eventually one of his six wives. The king murdered one of these wives with her son and daughter and murdered Radegonde's brother. In revulsion she fled from him and sought asylum at a monastery. Later she became a nun and founded the Holy Cross Monastery at Poitiers. In Radegonde's monastery, study came next in importance to prayer, and her nuns were encouraged to spend two hours every day in reading. In the hospital she had built, Radegonde bathed the patients herself, giving special care to the lepers. To this group of social outcasts, who were deprived of the necessities of life and love and affection, Radegonde, a queen and nun, bestowed an embrace of welcome and a "leper's kiss."

St. Hilda, the abbess of Streonshalh (now Whitby) in England, was born of noble parents and was a cultured, scholarly woman and a gifted administrator, teacher and counselor. Due to her guidance and inspiration, her community did more than translate, transcribe and illuminate manuscripts; creative writing was encouraged and Caedmon, the first English poet, re-

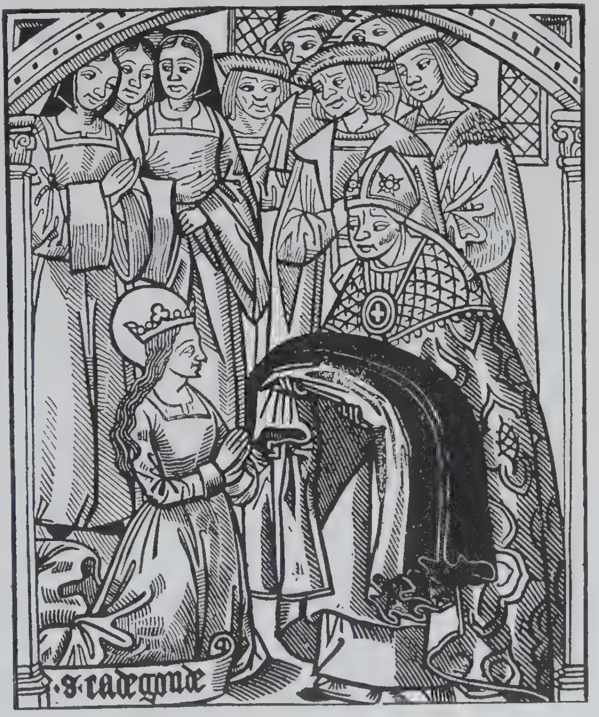

Figure 90. St. Radegonde, wife of King Clotaire, receiving religious robes from St. Medard. (From an old woodcut.)

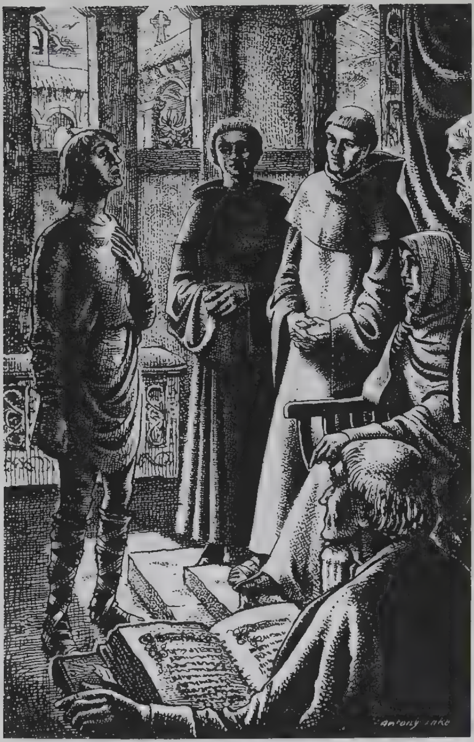

Figure 91. Caedmon appearing before Abbess Hilda who encouraged him to tell his tale in his own words. (Roche, Christians Courageous. Burns & Oates, Ltd.)

ceived his encouragement and guidance here.

Associated with each Benedictine Monastery were the associate members called *oblates.* These members could live within the monastery or in their own homes but gave their services to the monastery and in turn received the benefits of such a relationship. This type of monastic affiliation is still in existence.

The capable women in the monasteries were not only the abbesses, but also the many gifted sisters and oblates who contributed to the monastery in a remarkable way. Such a person was the sister, Hrotswitha (935–1001), of the Benedictine Abbey at Gandersheim. Hrotswitha entered the monastery at the age of 23 and was tutored by the Mistress of Novices and the Abbess, studying Virgil, Plautus, Horace, Terence and Aristotle. She had great writing ability, and her dramas were given to the literary world in a French translation in 1845. These works glorified Christian feminism and showed how it could conquer the brutality of man. Hrotswitha was one of the great literary personalities of history, and it is said that her plays were enacted by nuns to an audience of nuns.

It is important to realize the part the monasteries played in the preservation of culture and learning. They stood as an oasis in a desert of insecurity, persecution and suffering. These monasteries offered refuge for the persecuted; encouraged manual labor, formerly the duty of slaves; fostered healthy, purposeful lives devoted to personal piety and promotion of human welfare; developed agricultural experimental stations; motivated artists and skilled craftsmen in architecture, music, painting and in arts and crafts; provided doctors and nurses to care for the sick; cultivated medicinal gardens; advocated personal and professional growth by studying; preserved manuscripts and built the foundation for universities by sending copies of manuscripts from monastery to monastery. Lastly, they were the school teachers of this period. Not only did the monasteries give new creative expression but they preserved the ancient cultural treasures, for when the empire fell, the ancient learning of the classical period would have been lost and forgotten were it not for the monks of the West.

Nursing attracted many of the women of this period and its recruits numbered several queens. *St. Clothilde* was a Burgundian princess who married Clovis I, King of the Franks. Widowed, she spent the rest of her life near the Monastery of St. Martin at Tours where she cared for the sick.

Queen Theodolinde, wife of Agilulf, King of the Lombards, worked conscientiously for the sick among the poor and especially for lepers. *St. Bathilde,* wife of Clovis II, King of the Franks, was kidnapped in childhood and became first a slave, then a queen-consort and finally queen-regent. The foundress of the monasteries at Chelles and Corbie, she retired as a widow to her Abbey at Chelles and ministered to the sick poor. It is said of her that as "queen, she never forgot that she had been a slave; and nun, she never remembered that she had been a queen."

St. Margaret married King Malcolm[2] of Scotland. Learned, beautiful and deeply religious, she washed the feet of beggars, gave money to the poor, visited hospitals and ministered to the sick. Margaret helped families in distress, especially displaced persons and ransomed captives of every nation, and founded hospitals, churches and monasteries. Her uncle, St. Edward the Confessor, King of England, is believed to have built the Benedictine monastery in London now called Westminster Abbey.

The first organized plan for the care of mentally ill and mentally retarded children (other than that at St. Basil's in Caesarea) was found in Geel in Belgium.

Tradition had its beginnings toward the end of the sixth century in the legend of St. Dymphna, an Irish princess who fled the incestuous demands of her demented father, a king of Ireland. He pursued and murdered her in the forests around what is now Geel in Belgium.

The fame of this saintly young girl spread as reports of miraculous cures, especially to those who were mentally ill and emotionally disturbed, occurred at her tomb. People brought their relatives in the hope of a cure. First, a shrine was built and then a church was constructed and dedicated to *St. Dymphna.* The alcoves of these edifices could not contain the number of patients who arrived in Geel on pilgrimages. A building adjoining St. Dymphna's church housed the pilgrims. This structure, called *Sieckenkamer* or *Chambre des malades,* frequently could not accommodate the large number of mentally ill and mentally retarded guests, so the housewives of Geel accepted these patients as boarders and as foster members of their family. The populace of Geel has developed great skill in caring for these foster members and has bestowed love and affection upon them.

Figure 92. St. Dymphna.

Judicious regulations, enacted as early as the fifteenth century by the Municipal Board of Geel, prevented abuses that might have occurred. When France annexed the Belgian provinces, the institution came under local government. In 1852, it was reorganized by the Belgian government and given the name of "colony."

Today, when a person arrives at Geel, he is received for observation at the "Infirmary" or central hospital. While there, a plan of care is instituted including the newest techniques of psychiatry before he is admitted into the home of the foster family. A home care plan has been developed whereby the psychiatrists and psychiatric nurses visit and check on the patients at regular intervals in their new environment.

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[2] His father was that "gracious Duncan" whose sad fate has been immortalized by Shakespeare. Macbeth usurped his kingdom.

The patients entrusted to the Colony of Geel enjoy, in spite of their misfortune, all the advantages of freedom and of family life; permanent contact with normal persons; voluntary work fitted to their aptitudes and their preferences as well as forms of entertainment.

Geel has a population of more than 22,000 and contains 5,850 families of which approximately 2,000 accept patients. 8,358 patients were admitted to the colony from 1926 to 1950. Of this number 2,197, or more than 26 per cent, returned to their families cured or improved.[3]

Geel is now an institutional town under government control and receives children from all countries and situations, placing them under the care of St. Dymphna and her modern counterparts who are anxious to give loving care to these children.[4]

SCHOOL OF SALERNO

In the transition from monastic to lay medicine the *School of Salerno* played an important part. Although the school's beginnings are not well known, it may have been an outgrowth of the Benedictine Abbey of Monte Cassino, for the library of Monte Cassino still contains many valuable medical manuscripts, and copies of these may have been sent to the new school. Benedictine monks joined Salerno's faculty which consisted also of lay men and women. This famous school produced many leaders in the field of medicine and surgery.

Students were given lectures in the classroom and at the bedside of patients, and discussions were encouraged. Methods of treating the patients included drugs, bloodletting, diet and psychotherapy in the form of soothing words and restful music. It is interesting to realize that the importance of psychotherapy in the process of healing was recognized. Anthimus, a physician of Theodoric, wrote a book called *Dietetica* on the importance of nutrition, food selection and preparation. In addition to providing an appropriate diet, the book stressed the theory that the food should be served attractively to encourage the patient to eat.

The importance of a good bedside manner was realized, and a doctor of Salerno was encouraged to question the messenger who summoned him to the bedside of the patient so that he could consider the patient's condition before seeing him. The doctor was advised to sit and chat pleasantly with the patient so that when he took the pulse it would be a true reading and not an elevated one caused by excitement.

Due to the wise influence of the medical leadership at the School of Salerno, medical legislation was enacted. As early as 1140, a law was passed forbidding anyone to practice medicine without being examined carefully. The essential education required to receive a degree from the School of Salerno and thence to become eligible for the examination for licensure was: three years of premedical study in logic, philosophy and literature, five years of study in medicine and surgery, and one year as an assistant to an experienced practitioner.

It is a well known fact that very early in its history women studied at Salerno. All branches of learning, including medicine, were opened to women, and copies of many medical licenses granted to women can be seen in the Archives of Naples. A famous woman doctor, Trotula by name, is supposed to have written a book on obstetrics and gynecology and to have been head of the department of diseases of women.

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[3] Gushee, L.: Unpublished translation of brochure obtained by Mrs. Mary Gushee on a visit to Geel, June 1957.

[4] See Kellogg, Mrs. Vernon: *Atlantic Monthly,* July 1926.

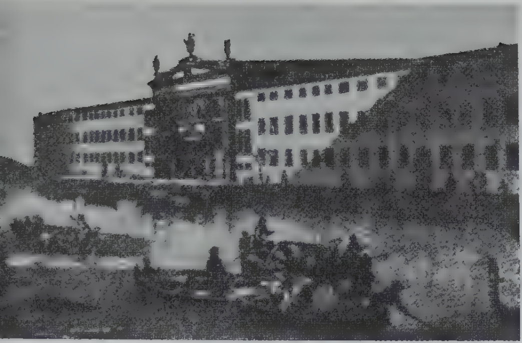

Figure 93. Hôtel Dieu of Lyons. (Bihet, *Histoire du Nursing.*)

The contributions of the School of Salerno to medicine are summed up by Castiglioni, who says that:

> it represents the first example of the lay school in which men from all nations and of all religions worked freely together . . . and there was initiated a systematic organization of the study of medicine.

MEDIEVAL HOSPITALS

There were three famous medieval hospitals built outside monastery walls and they are extant today: the Hôtel Dieu in Lyons, the Hôtel Dieu in Paris and the Hospital of the Holy Spirit or the Santo Spirito in Rome.

The *Hôtel Dieu in Lyons,* established in 542, was organized on the pattern of an almshouse and was administered under lay management. The nursing was carried out mainly by repentant women and by widows called sisters (though not a religious group) and by male nurses called brothers. This hospital has achieved an interesting record of accomplishment.

The *Hôtel Dieu in Paris* was founded around 650; it was conducted under lay administration and built on the almshouse pattern. The nursing staff formed a religious order called the Augustinian Sisters, the oldest nursing order of sisters in existence.

The *Santo Spirito Hospital* in Rome was founded by order of the Pope in 717 and was built primarily to receive only the sick. This hospital exists today and has inspired the establishment of many others like it.

ISLAMISM AND ARABIAN MEDICINE

A new monotheistic religion called *Islam* arose in the peninsula of Arabia, a country of sandy deserts, fertile valleys and rock-bound coasts. Its first followers were the Arabs, a Semitic group descendant from Ishmael, one of the sons of Abraham, who were the true Arabs or Saracens.

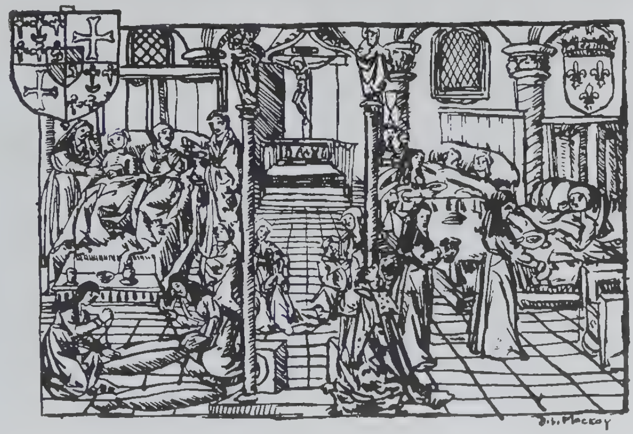

Figure 94. A ward in the Hôtel Dieu of Paris. Facsimile of a wood engraving at the head of a sixteenth century manuscript. Reproduced from Hoffbauer, Paris, A Travers les Âges, I. (Courtesy of the Modern Hospital Publishing Co.)

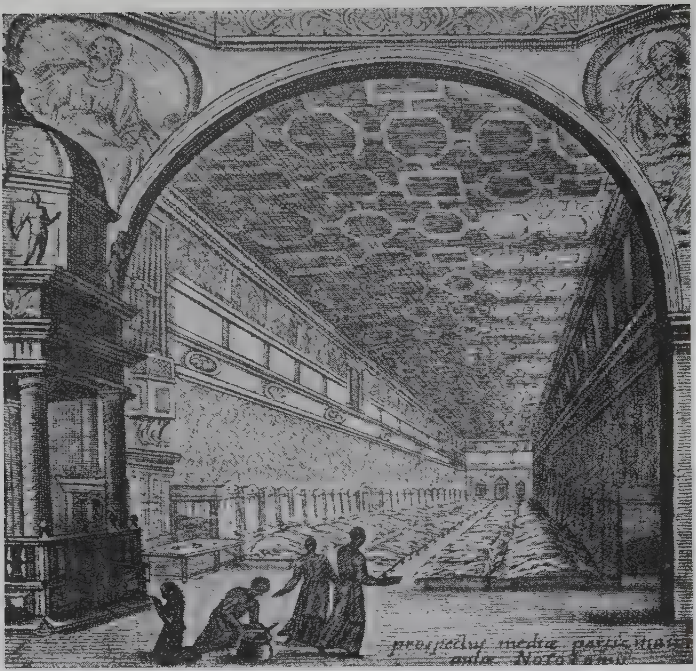

Figure 95. A ward in the Santo Spirito Hospital of Rome, seventeenth century. (Castiglioni, Arturo: *A History of Medicine*. Alfred A. Knopf, New York.)

Mohammed, the founder of Islam, was born at Mecca in the year 570. In 610 he announced that he had been called by Allah (the name for God in Islam) to preach a new religion. The revelations which he said he had received have been embodied in the Koran which was written in Arabic and which caused Arabic to become the language of the followers of Islam throughout the world.

Mohammed commenced his work by striving to sway his fellow men from idolatry to the worship of Allah. Gradually his enthusiastic converts extended this invitation by means of the sword. Each convert was called a "Moslem" or "one who submits."

By the time Mohammed died in 632, Islam or Mohammedanism had spread by the military genius of Mohammed, and his followers controlled the territories of Egypt, Palestine, Syria and India. Later Roman Africa, Spain and even the capital of the Byzantine State, Constantinople, were captured. Twenty-one years after the death of Mohammed, the rule of Islam extended over a territory as great as the Roman Empire.

Two forces ended these sweeping military successes and prevented Mohammedanism from spreading over the civilized world. In the East, the eastern part of the Roman Empire—the Byzantine State—was saved by the military skill of the soldiers of Emperor Leo III; in the West, a powerful Frankish duke, Charles Martel, defeated the Arab forces.

The Arabs had learned much in their conquests and they assimilated eagerly the effects of this cultural exchange with other groups. One of these groups which had considerable influence on the field of medicine was that of the Nestorians. These were the followers of a heretical monk, Nestorius, who, after he with some of his followers were expelled from the Byzantine State, settled in Syria and thence migrated to Persia, China and India. The Moslems secured copies of the Greek medical texts of Hippocrates, Galen and Dioscorides from the Nestorians, who assisted in the translation of these manuscripts into Arabic.

The great contributions of the "Golden Age of *Arabian Medicine*" were concentrated in the areas of compounding drugs; in the advancement of medical knowledge through diagnosis, description and treatment of disease; in requiring licensure after careful examination of physicians and pharmacists; in providing medical leaders and in the construction and administration of exceedingly modern hospitals.

The Arabs were retarded in anatomy and physiology because dissection was forbidden. Surgery was frowned upon, cautery being more popular than the knife.

Three of the famous physicians of this period were Rhazes (860–932), Avicenna (980–1037) and Maimonides (1135–1204).

Rhazes was a Persian scholar who added to the medical contributions of Hippocrates and Galen by his medical work entitled *The Compendium.* This was an encyclopedia written in Arabic. One section of this work was a series of case histories which reveal Rhazes' vast medical knowledge. He described the diseases of smallpox and measles in one of his monographs and was a skilled clinician.

Avicenna, a Persian, was one of the great scholars of the Arabic world. He had many academic interests but our interest lies in his contributions to the field of medicine. Called the "Prince of Physicians," his writings, especially his *Canon of Medicine,* have been considered some of the most important textbooks in the field of medical education; the *Canon of Medicine* was studied in the medical schools of Europe from the twelfth to the seventeenth centuries.

Rabbi Moses Maimonides, the third member of the Arabic medical triumvirate, was born in Moslem-controlled Cordova, Spain, of a Jewish family descended from King David. He was an excellent clini-

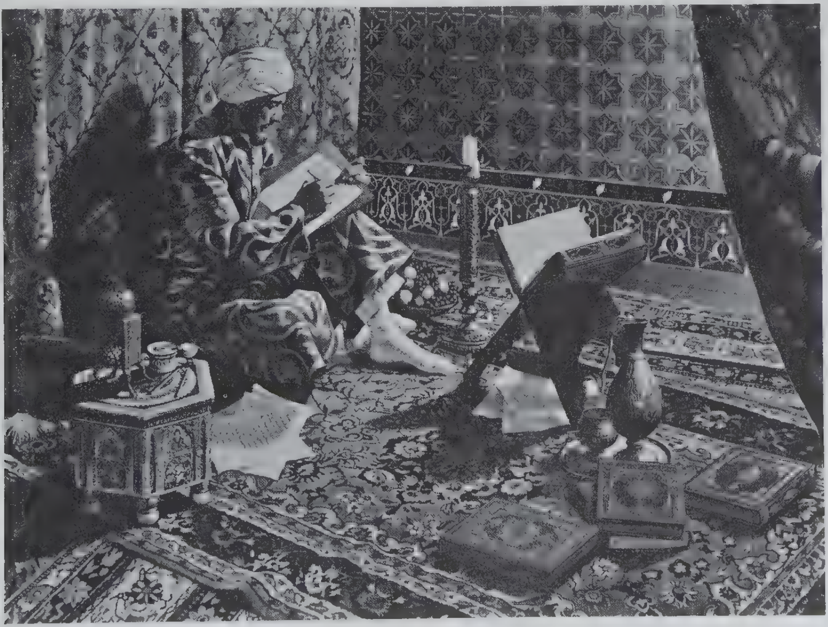

Figure 96. Avicenna: the Persian Galen. © 1953 by Parke, Davis & Co.

Figure 97. Rabbi Moses Maimonides.

cian and as his fame spread he became the court physician to the Sultan Saladin. It has been said that during the Crusades Richard the Lion-Hearted, learning of Maimonides' great skill, asked him to return to England with him and be his personal physician. Maimonides has been remembered for his writings, and especially for this beautiful prayer:

And now I turn unto my calling;
Oh, stand by me, my God, in this truly important task!
Grant me success! For—
Without Thy loving counsel and support
Man can avail but naught.
Inspire me with true love for this my art
And for thy creatures.
Oh, grant—
That neither greed nor gain, nor thirst for fame, nor vain ambition,
May interfere with my activity.
For these, I know, are enemies of Truth and Love of men,
And might beguile one in profession,
From furthering the welfare of Thy creatures.
Oh, strengthen me!
Grant energy unto both body and the soul,
That I may e'er unhindered ready be
To mitigate the woes,
Sustain and help,
The rich and poor, the good and bad, the enemy and friend.
Oh, let me e'er behold in the afflicted and the suffering
Only the human being!

Medical centers at this time were located in Cairo, Alexandria, Damascus and Baghdad. *Hospitals* were part of these centers and were famous for having beautiful architecture, being well equipped, having segregated services, employing unusual ideas of social service,[5] encouraging medical study by including lecture rooms and libraries, and employing readers and story-tellers for the patients.

Alchemy and pharmacology were specialties and the Arabian scientists, highly skilled in compounding medicines, were interested in finding an "elixir of life." Pharmacists were independent practitioners and apothecary shops were common in the Moslem countries.

It is apparent that Arabian medicine was influenced strongly by Graeco-Roman contributions. After many years the original Greek medical literature guided the medical thinking even though it had undergone translation into Syriac, Arabic, Hebrew and finally Latin.

The Moslem women were notably absent in the care of the sick, but this absence

Figure 98. Arabic materia medica. (Bihet, *Histoire du Nursing.*)

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[5] For example, on discharge a patient was given money to permit him to convalesce properly before returning to work.

is understandable, for these women were kept in seclusion and shrouded in heavy veils. Polygamy was practiced by the men of the Moslem families and it is said that Islam improved the status of woman mainly because it forbade the killing of girl babies which had been the practice.

As the early Middle Ages end, amid the distress, poverty, and political chaos, it is observed that the Church had grown; that Christianity had spread; that missionaries carried not only the religious message but civilization as well; that benevolent institutions have arisen; and that monks and nuns have replaced the deaconesses and matrons in the care of the sick. The struggle of Islam versus Christianity will be a consideration of the later Middle Ages.

Aids to Enrich an Understanding of This Period

I. Visit a museum containing exhibits on the cultural aspects of the Middle Ages.
II. Construct a diorama showing a feudal community, a monastery including the monastery garden or the interior of one of the famous hospitals of this period.
III. Collect postage stamps to stress the contributions of the significant forces during the Middle Ages.
IV. Assemble a collection of famous pictures representative of this period.
V. Emphasize the costumes of this period by dressing dolls to represent the nursing leaders.
VI. Describe the candidates from this era that should be included in the Album of Famous People.

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VI

Late Middle Ages

THE CRUSADES

Toward the close of the eleventh century the Seljuk Turks who had embraced Islam became the most warlike segment of the Moslem world. During their tour of conquest they captured Palestine, among other places, and erected mosques in the Holy City of Jerusalem. Cruel persecutions were meted out to the Christians who had been making pilgrimages since the death of Christ. The capture of the Holy Places and the harsh treatment of the pilgrims impelled the European Christians to unite and stop the actions of the "infidel" Turks. Armed intervention seemed the best solution. Thus was initiated the military expeditions of the great religious movement known as the *Crusades* which lasted for nearly two hundred years (1096–1291).

In evaluating the results of the Crusades, there are both favorable and unfavorable aspects to be considered in these two hundred years which served as an avenue of interchange in ideas, customs and even disease between the East and West.

It is difficult for us to envision the ordinary difficulties that beset the Crusaders on their journey. Travel was slow and laborious; adequate and nutritious food was hard to procure and harder to preserve; prevention of disease was impossible, and immunity to newly encountered diseases was low in most cases or nonexistent.

Hospitals and shelters had been built for the pilgrims by such persons as St. Helena and St. Paula, but the ones available did not meet the needs of the Crusaders. Fatigue, malnutrition, digestive disturbances from food poisoning, poor sanitary conditions and contact with communicable diseases all contributed to an acute demand for hospitals, doctors and nurses. This brought about one of the major results of the Crusades, the formation of *military nursing orders* which drew large numbers of men into the field of nursing. The membership in these orders consisted of monks, knights and serving brothers.

The *Knights Hospitallers of St. John* were organized originally to staff one of two hospitals which had been built by rich merchants of Amalfi in 1050 A.D. in Jerusalem. The hospital for male patients was placed under the protection of St. John (probably St. John the Baptist) and a

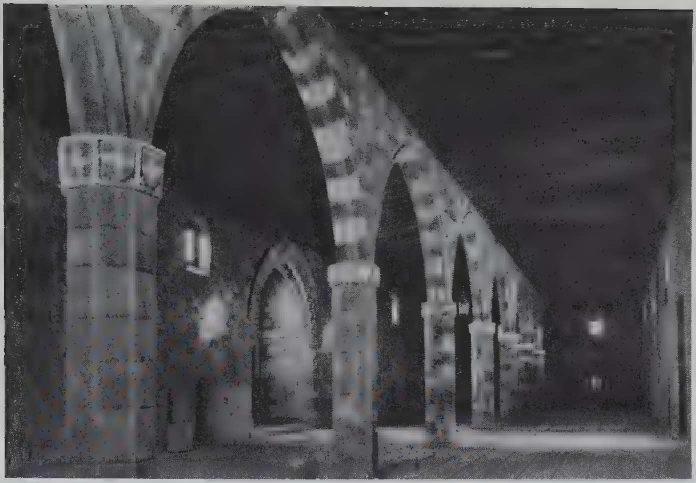

Figure 99. Ward of Crusaders' Hospital of St. John of Jerusalem, Island of Rhodes.

monk, Peter Gerhard, was placed in charge. The second hospital for female patients was dedicated to St. Mary Magdalene and was staffed by nuns under the direction of a capable Roman lady named Agnes. The purpose of these orders was to care for pilgrims who became ill on their journey to the Holy Land. Their care extended to Moslems and Jews as well as Christians. The hospitals in Jerusalem were well equipped, each patient having a cloak of sheepskin and boots, the forerunners of bathrobes and slippers.

The knights were mainly a nursing order, but assumed a military role when it was essential to defend the hospital and its inmates. Their habit,[1] worn over their suit of armor, was a black mantle with a white *Maltese cross.*

Gradually, the knights built additional hospitals, hostels, and hospices at strategic points in the mountain passes and at river crossings. When the Knights Hospitallers went to Rhodes, they built extensive fortifications. They set up a Health Commission which prevented an outbreak of the plague by strict enforcement of a forty day isolation period for all those who had come in contact with plague victims. This is the origin of the term *"quarantine."*

The order settled on the island of Malta in 1530, and the hospital they constructed there has been a famous one with many interesting features. As early as 1617, a board was placed at the head of each bed upon which doctor's orders were written. Also, the physicians and surgeons were accompanied on their rounds by a secretary who took down the prescriptions as the doctors dictated them.

A method of protection had to be devised to prevent spread of communicable diseases when ships docked in the harbor. Some measures taken to prevent and control disease in addition to quarantine and isolation were the use of a pure water supply brought by an aqueduct system; drainage canals for the overflow of water; collection and disposal of garbage; and burial of the dead outside the city walls.

After the knights had settled on the island of Malta, they reestablished the Sisters of the Knights Hospitallers of St. John who had been forced to flee Jerusalem when that city fell. They had escaped to Europe but came to Malta and remained there after the Knights had departed from this area in 1798. This order of sisters, wearing the habit of the Hospitallers, still remains to care for the sick of Malta. (It has been said that at first the habit of the order was red with the white Maltese cross, but later the red was changed to black.)

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[1] The Maltese cross was the religious symbol of the crusading knights. It has eight points to represent the eight beatitudes.

The Knights Hospitallers of St. John have been known as the Knights of Malta for many years. They have been considered a sovereign power with representatives of ambassadorial rank, and the diplomatic sovereignty is recognized universally. Under the Geneva convention their insignia, the Maltese cross, was awarded the same recognition of immunity by belligerents in war as the Red Cross. As Knights Hospitallers of St. John and later as Knights of Malta, they have given outstanding service in international nursing.

The *Teutonic Knights* came into existence in 1190 during the siege of Acre. This order was comprised of German knights who banded together and converted their tents into emergency hospitals, alternately nursing and fighting. They, too, took vows to care for the sick, erect hospitals and defend the faith. The Teutonic Knights were distinguished from the Knights of St. John by the white tunic with a black Maltese cross outlined in gold over their coat of mail.

The *Knights of St. Lazarus* were devoted especially to the care of lepers; the name Lazarus was derived from the parable of the leper in the Bible.[2] Many historians seem to indicate that this is the oldest of all knightly orders. It has been associated with the special hospital for lepers which was part of the Basilias built by St. Basil. Though these knights set a valiant example and gave excellent care, the order ceased to exist by 1830.

An interesting group emerged at this time known as the *Order of Trinitarians,* founded in 1198 for the purpose of ransoming the Christians taken prisoner by the Moslems. Today we can appreciate what this order did to release the prison curtain and send the refugees home to freedom, friends and family. This group

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[2] The plight of the leper is presented strikingly in this parable.

Figure 100. Lazarus and the Rich Man (Bassano, 1510–1592). (Courtesy The Cleveland Museum of Art; Delia E. and L. E. Holden Funds.)

wore a white habit with a red and blue cross on the breast.

The Crusades afforded a glorious opportunity for cultural interchange, especially for contact with *Arabian medicine.* This interchange was particularly valuable in broadening the scope of patient care and hospital planning, and in the development of medical education.

GROWTH OF CITIES

The feudal system declined in importance, and the group of families that had previously lived around the feudal castle for protection began to build towns and develop a new social structure.

There were disadvantages to this new way of life. Living conditions were overcrowded; houses were ill-ventilated and heated poorly; animals shared the family quarters; there was improper sewage and garbage disposal; water supply and resources for preservation of food were inadequate. Continuance of these conditions produced serious consequences.

Frequently food poisoning resulted when food remaining from the previous day was seasoned highly, then served. One historian mentioned a covered casserole which was called "coffin."

Refuse from houses was thrown into the streets. Indeed, it has been said somewhat facetiously that the use of stilts became obligatory in many places. As a result, town edicts were posted requiring the citizenry to stop throwing refuse into the streets. The next injunction reprimanded the throwing of refuse in front of a neighbor's house. In some cities this refuse was removed every four days; in others, every eight days! Where could this garbage and debris be placed? The moat seemed to be a likely place, and so it was used.

This surrounding moat had provided the town with its water supply but with its "added burden," it was suitable no longer. Fountains and wells became necessities, and a drinking cup was hung on the side.

Public bathhouses were constructed. However, it was not until the fifteenth century that the sexes were segregated in these baths.

The citizens were concerned at the increase in the disease rate yet were ignorant of the elementary principles of hygiene. They worried about inhaling the foul-smelling air and about the increase in the numbers of rats and vermin. As the disease rate continued to mount, the populace wondered about the possibility of transferring infection by the drinking fountain cup.[3] Immediately, all lepers were told to carry their own cups.

The importance of the four bodily humors in keeping a person healthy remained the prime health concept at this time. To prevent or cure disease it was essential to withdraw the corrupt humors from the body. This was done by *purging, cupping, blood-letting* and *leeching.*

A powerful purgative was given frequently followed by the withdrawal of a small amount of blood. This procedure, called blood-letting, was one of the functions of the barber.[4] Leeches were also used for this purpose. These treatments were repeated as frequently as it seemed necessary.

Often, cups were applied to the skin and adhered to it by means of suction, the air having been quickly withdrawn from the cup. These applications acted as counter-irritants.

Many extraordinary medicines came into vogue at this time, such as one called the *horn of the unicorn.* An animal's horn

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[3] The use of common drinking cups has continued. The 1911 Connecticut Legislature passed a law prohibiting the use of common drinking cups in public places.

[4] The red and white barber poles are symbolic reminders of this early practice.

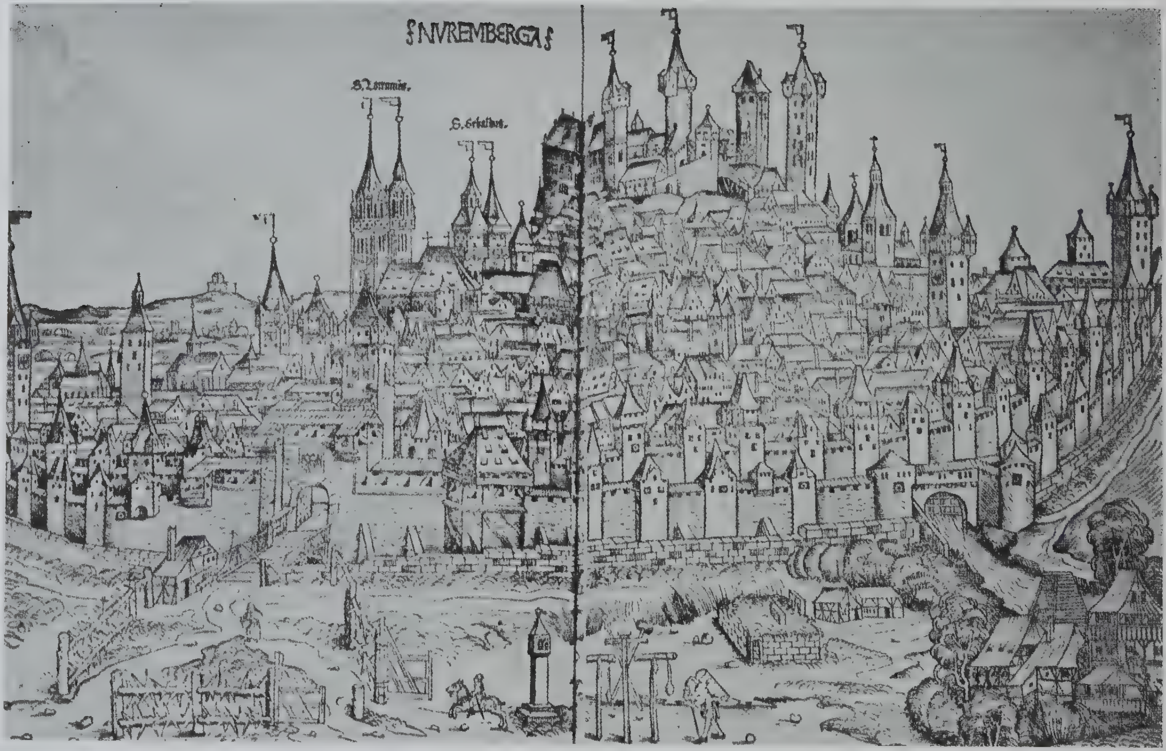

Figure 101. Nuremberg in the fifteenth century. (Courtesy Metropolitan Museum of Art.)

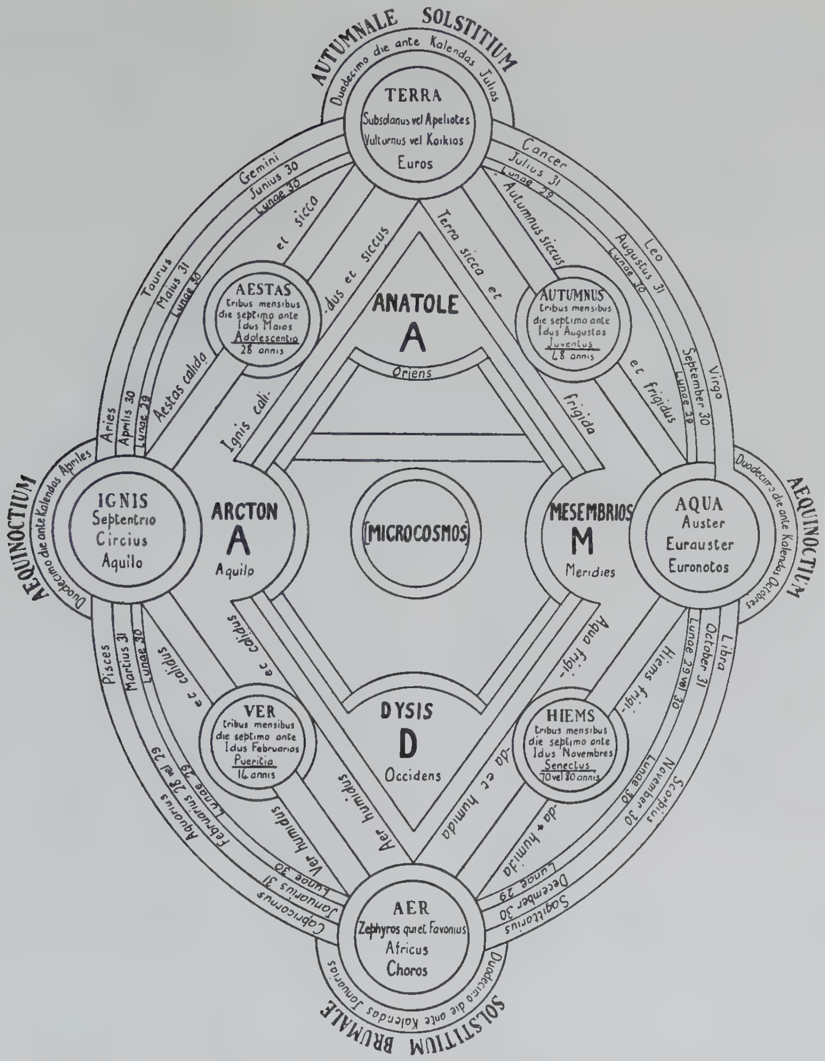

Figure 102. The Macrocosm as conceived in 1011 by Byrhtferth of Ramsey. (For interpretation see Figure 103.) (Grattan and Singer: *Anglo-Saxon Magic and Medicine.*)

which was supposed to have the properties of an antidote was hollowed out and used as a cup. The portion of the horn that was removed was powdered and taken as medicine. This was one of the miracle drugs of the Middle Ages and was considered a panacea.

Another medication in which people had implicit faith was the powder scratched from the stone covers of the coffins of saints. This powder was suspended in water and was drunk. Some of the coffin covers had to be replaced three and four times because of the amount of stone scratched away. Herbs were deposited near or on the coffin and a concoction of these herbs was made for the sick person. Often linen was laid on the tomb and then placed on the bed or person of the patient.

The prevalence of the disease called *leprosy,* the genuine fear of it and the attempts

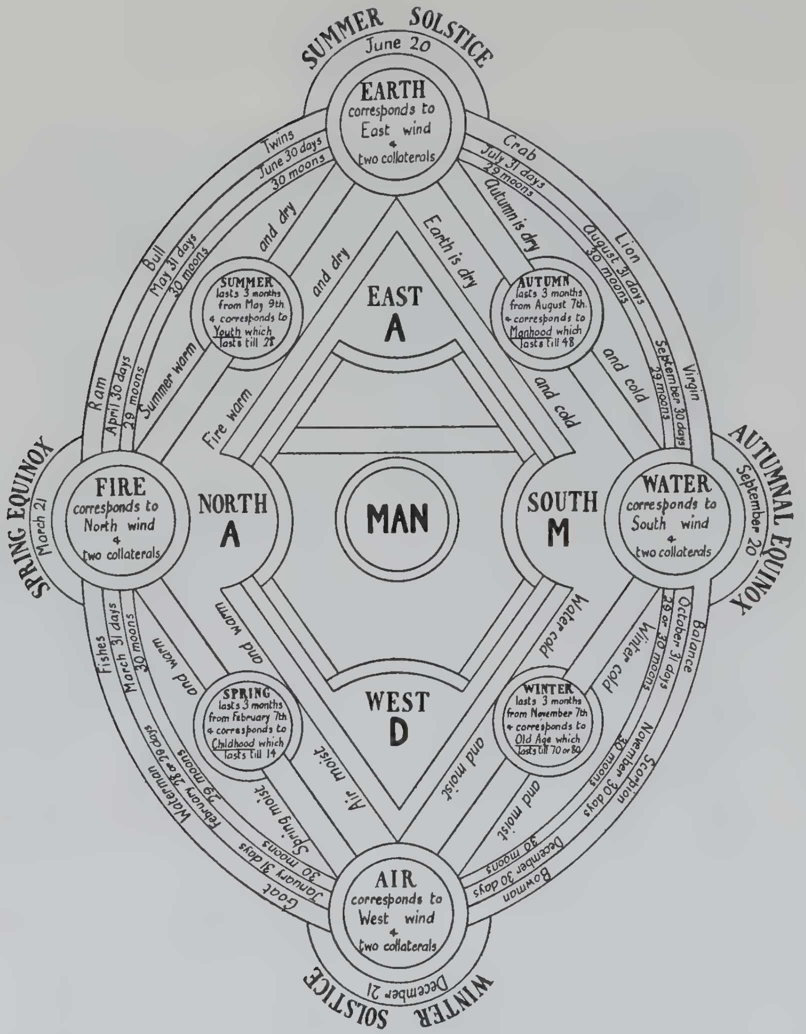

Figure 103. Translation of Figure 102. (Grattan and Singer: *Anglo-Saxon Magic and Medicine.*)

to isolate this disease have been historical facts from earliest times. That these people have been treated with much cruelty, little understanding and little kindness is also a known fact. Certain persons, however, gave "over and beyond the call of duty" to welcome, befriend and assist these patients.

In medieval communities it was noted that diseases were increasing, especially the disease of leprosy. Due to an inability to diagnose this disease accurately, many diseases of the skin were grouped under the heading "leprosy." All persons suffering from this disease were treated in the same way; they were expelled from the community to protect the healthy. We have mentioned that leper houses, lazarettos and finally leprosaria were built to house these patients when they were critically ill. The number of such establishments is reputed to have been 19,000 in Europe during the thirteenth century.

Special laws, which demanded that lepers announce their approach by shaking a wooden rattle or blowing a horn, were enacted in the Middle Ages. Lepers were permitted to beg for the necessities of life.

Records of this period reveal an astonishingly large number of earthquakes, tornadoes, cyclones, and floods. In the European countries, the floods were devastating, leaving destruction and desolation in their wake. Crops were destroyed, resulting in famine and, ultimately, disease. The populace seemed utterly incapable of coping with these problems.

In the twelfth century a catastrophic outbreak of the *bubonic plague,* known as the Black Death, brought fear and devastation to much of Europe and the rest of the world. Records of this disease had appeared in the Bible and mention has been made of the limited epidemics that occurred in the ancient civilized world.

In 1345, ships returning from a long voyage to China and India reached the ports of the Black Sea and the Mediterranean. The cargo, when landed, included some of the rats from the ships. With the stage set by the unsanitary conditions described previously, an outbreak of bubonic plague resulted.

A presentation of the clinical picture may help to comprehend this historical tragedy. Plague is an acute infectious disease caused by a bacillus called *Pasteurella pestis.* Primarily a disease of rodents, particularly rats, the plague is readily transmissible to humans by such parasites as fleas feeding on the diseased rat. The disease is transmitted also by direct contact with an infected person. After a brief incubation period of about two days, the following clinical picture is observed: chills, fever (101°–105°), severe headache, extreme prostration, vertigo, abscesses in the lymph glands called buboes and hemorrhage of the superficial blood vessels which gives a bluish-black color (responsible for the popular name "Black Death"). Finally death results. There are several types of bubonic plague.

The suddenness of the onset of disease and the brevity of its duration were responsible for the hysteria and panic that accompanied such an epidemic.

The chief means of defense from the disease in the medieval mind was to flee from the infected persons and from the location of the outbreak. Thus families fled from their loved ones, leaving them to die unattended.

The disease reached pandemic (worldwide) proportions eventually and when the plague ended, India was reputed to have been depopulated; China lost thirteen million persons; Cairo was supposed to have lost daily from ten to fifteen thousand lives and altogether at least a quarter of the population of the then known world had perished.

The other great scourge of the Middle Ages was *syphilis*. The origin of syphilis is unknown. It was supposed to have appeared in epidemic form at the siege of Naples in 1495 and to have been communicated to French invaders by Spanish occupants who had acquired it from Columbus's sailors, after visiting the New World. This is why it has been called "French Disease."

Syphilis was known prior to this time but under different names. Medieval syphilis was known first as *mal franzoso, morbus gallicus* or *mala napoletana*. After it became epidemic, it was called the "pocks." By the end of the fourteenth century, physicians were already prescribing mercurial ointments, but these were used for many skin afflictions other than syphilis.

On March 25, 1493, the town crier of Paris was directed to order from the city all afflicted with "the greater pox" (*la grosse vérole*) under pain of being thrown into the Seine River.

Another problem, less dramatic and spectacular but none the less real, was that of the frequent feuds. The high incidence of family feuds necessited nursing care due to the wounds inflicted during these

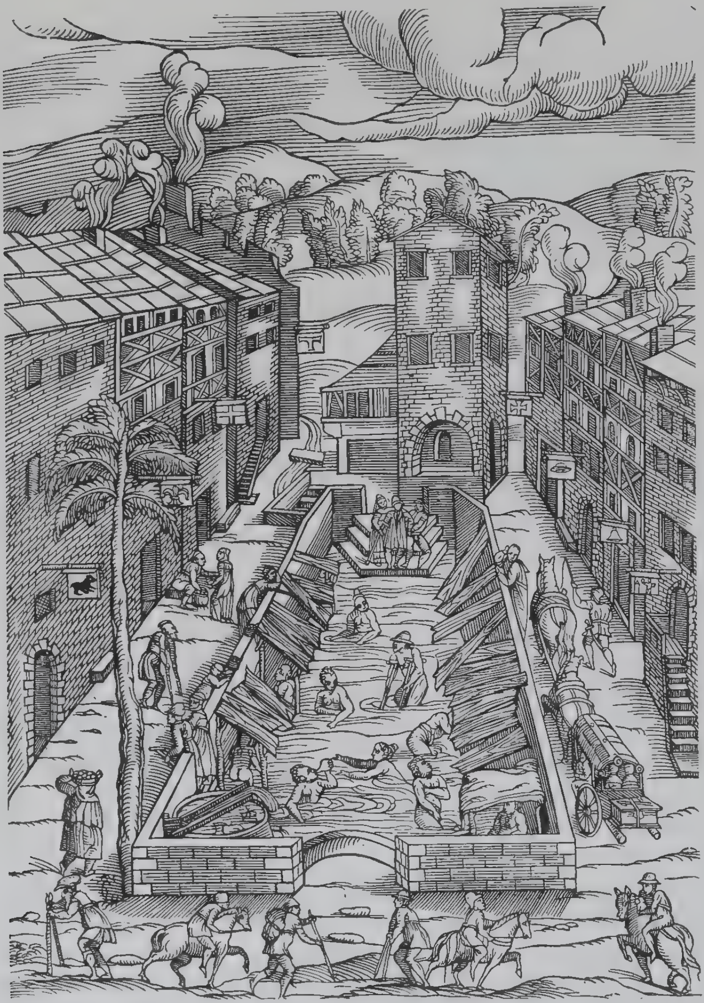

Figure 104. A public bathing facility in a European town during the sixteenth century. (Martin: *Deutsches Badewesen in vergangenen Tagen.*)

battles. This aspect of life in Italy in the fourteenth century was presented by Shakespeare in *Romeo and Juliet.* The tragic street scenes of fighting and stabbing were not the result of Shakespeare's facile pen and creative mind but were based on factual evidence.

RISE OF THE MENDICANT ORDERS

With the rapid spread of misery and sickness and the fright of the plague, religious fervor mounted. A different type of religious ministration was required from that of the period when communities lived around a monastery. The answer to this demand came when St. Francis and St. Dominic each founded three religious orders: the first order was for friars; the second order was for nuns; the third order was for the laity, men and women who continued to lead secular lives.

St. Francis of Assisi (1182–1226) was one of the most lovable personalities the world has known. Francis was a worldly, pleasure-loving youth with extraordinary qualities of leadership. After a serious illness in his early twenties, Francis changed his manner of living, becoming concerned about others, and patterned his life after that of his Redeemer.

Disinherited by his merchant father for giving profuse alms to the poor, Francis donned a rough brown tunic, bound it around his waist with a heavy white rope, and went barefooted around the countryside ministering to the poor and outcast.

His first real spiritual challenge may have been his encounter with leprosy. St. Francis, having a marked aversion to leprosy, beheld a leper approaching him and begging for alms. After a brief pause, St. Francis embraced the unfortunate man and gave him what money he had. Becoming the champion of lepers, St. Francis and his companions lived next to the leper hospital and ministered to the patients. He made the public acutely aware of the plight of the leper and the problem of leprosy.

Many followers were attracted to this happy, kind and courageous man and in 1209 the Order of Friars Minor, or "little brothers," was formed. The rule of the Franciscans emphasized poverty and humility; they were mendicants and begged for themselves and for the poor. This obligation of mendicancy forced the friars to receive their daily bread as the fruit of their apostolic labors.

In studying the life of St. Francis, a medical practice of this period was noted. It became apparent that Francis' vision was failing and that he would soon become blind. The medical treatment selected was to cauterize his eyes with a red-hot iron without even the benefit of a soothing drug.

Figure 105. St. Francis of Assisi. (Bellini, *ca.* 1430–1516. Frick Collection. New York. University Prints.)

The spirit that guided St. Francis of Assisi has been summed up in his prayer:

Lord, make me an instrument of your peace.
  Where there is hatred, let me sow love.
  Where there is injury, pardon.
  Where there is doubt, faith.
  Where there is despair, hope.
  Where there is darkness, light.
  Where there is sadness, joy.
O Divine Master, grant that I may not so much seek
  To be consoled as to console,
  To be understood as to understand,
  To be loved as to love,
  For it is in giving that we receive,
  It is in pardoning that we are pardoned,
  It is in dying that we are born to eternal life.

Before his death in 1226, St. Francis' followers numbered in the thousands. One of his well known followers was the learned *St. Anthony of Padua* (1195–1231) who had been a teacher at the Universities of Paris, Bologna and Padua. Anthony was an eloquent preacher, a benevolent almsgiver and a prison reformer.

St. Clare, the beautiful daughter of a rich and noble family of Assisi, heard St. Francis preach and was motivated to follow his simple life of charity, humility and fervent devotion. Against strong parental opposition, Clare, garbed in her jewels and finery, changed happily into a brown sackcloth habit from St. Francis. Then Clare entered a nearby Benedictine abbey; in a short time a special convent was established for her and other young women who wanted to share this life of poverty and simplicity. Her sister Agnes joined the group and a short time after her father's death her mother joined them also. This second order of St. Francis became known as the order of *Poor Clares.*

The rule of the Poor Clares was essentially the same as that of the Order of Friars except that, while the friars were expected to beg for alms, the order of sisters was supported by alms brought to the convent by the community, and by the sale of products made by the sisters' own hands. In times of epidemics, the Poor Clares took care of the sick and opened their convent as a hospital.

Figure 106. St. Clare of Assisi. (Giotto *ca.* 1266–1336. University Prints.)

St. Clare died in 1253, but her order continues and has been described in *A Right to Be Merry.*[5]

While St. Francis was achieving success in Italy, *St. Dominic* was establishing an Order of Preachers, more frequently called the Dominicans. Many eminent scholars arose from these two groups at this time: the Dominican Albertus Magnus (1206–1280) and the Franciscan Roger Bacon (1214–1294) contributed to the beginnings of experimental science by emphasizing the value of observation, experimentation and the use of inductive reasoning. The scholarly literary endeavors of St. Thomas Aquinas (1225–1274) have been well known. Before becoming a Dominican, St. Thomas Aquinas received his early education at the famous Benedictine Monastery of Monte Cassino.

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[5] Sister Mary Francis, P. C.: *A Right to Be Merry.* New York, Sheed and Ward, 1956.

The *Third Orders* of St. Francis and St. Dominic were established for many of the distinguished persons whose occupations and obligations could not permit them to live a conventual life, but who felt a need for this spiritual bond and wanted an opportunity to share in the accomplishments of the Order. Into the Third Order of St. Francis came such well known persons as St. Louis IX, the king of France; St. Elizabeth of the royal house of Hungary; Dante, the famous poet; and three great scientists in the field of electricity, Volta, Galvani and Ampère.

St. Elizabeth of Hungary, the daughter of King Andreas II and Queen Gertrude of Hungary, was betrothed at four years of age to Ludwig, son of the Landgrave of Thuringia. They were married at an early age and were a devoted couple. Elizabeth was cheerful and fun-loving and exemplary for her goodness, generosity and sympathy. After her marriage, Elizabeth had a turnstile built into one of the castle gates, and she herself distributed alms daily to the poor and needy. During the famine of 1226, Elizabeth organized a distribution of food, depleting the castle granaries for the purpose. She would take the hour's walk from the castle to the nearby town to visit the sick in their homes, attending personally those who were ill and staying with the dying.

Elizabeth joined the Third Order of St. Francis and devoted her entire time, strength and energy to the needs of the sick poor. She built hospitals and directed her services especially to the lepers. Prisoners received her attention also and she bathed the wounds inflicted by their chains.

Before his death during one of the Crusades, Ludwig had cooperated with Elizabeth in her projects, partly because he had been permitted to witness several instances of her unusual sanctity. After his death, however, Elizabeth was expelled from her husband's castle, the Wartburg,

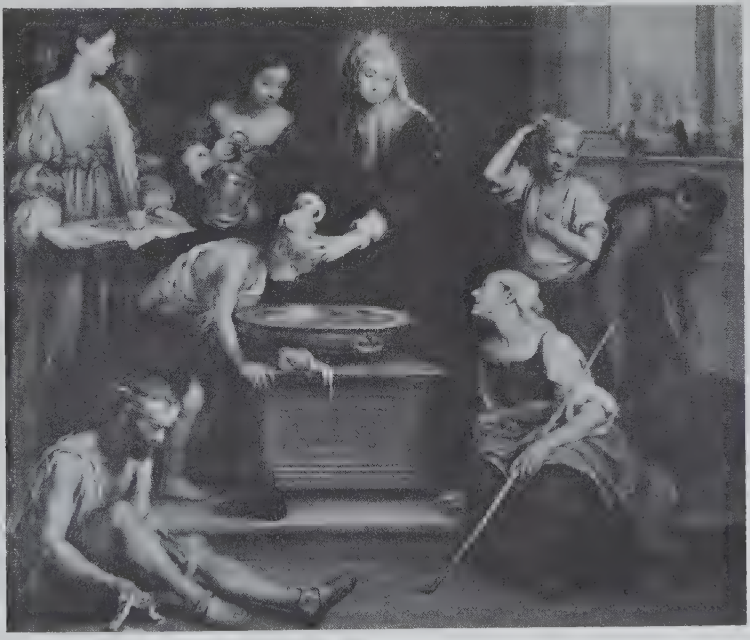

Figure 107. St. Elizabeth of Hungary. (Murillo, 1618–1682; Hospital de la Santa Caridad, Seville.)

and those to whom she had given so generously refused to assist her. Elizabeth settled at Marburg where she spent the remaining years of her short life (she died in 1231 at the age of twenty-four) nursing the sick in the Marburg hospital that she had founded.

St. Louis IX, the king of France and also a member of the Third Order of St. Francis, was interested especially in the three great needs of humanity—education, justice and charity—and he devoted his life to achieving these for his subjects.

Louis' endeavors in the field of education resulted in the building of the Saint-Chapelle in Paris and in the founding of the Sorbonne College of the University of Paris. Louis stressed the need for properly educated persons to care for the sick and emphasized the necessity of adequate medical education. He himself waited on the sick, bathed them, served them and attended to their needs regardless of their unsightly appearance. Lepers received special care from him. Louis' justice and charity endeared him to his subjects and when he died on one of the Crusades he was mourned by Christians and Moslems alike. Under his reign, France enjoyed prosperity, peace and progress.

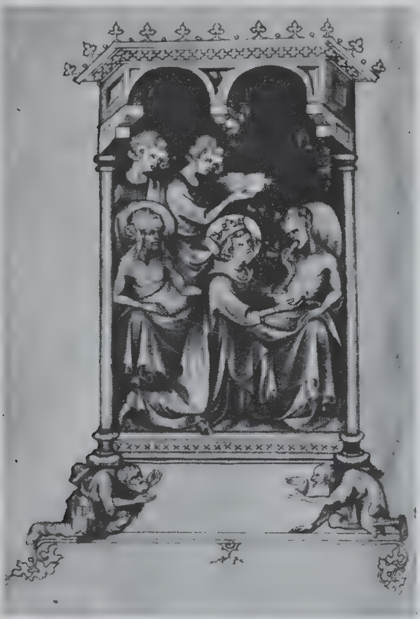

Figure 108. St. Louis administers to the sick in a medieval hospital. (Jean Pucelle, *ca.* 1325.) This is one of many illustrations depicting scenes from the life of St. Louis which appeared in a small book of prayers belonging to his granddaughter, Jeanne D'Evreux, the Queen of France and wife of Charles IV.

Members of the Third Order of St. Dominic were known first in Italy by the name Mantellate. These were lay women who continued to live at home but bound themselves to a more religious schedule of life. These women wore the Dominican religious habit which consisted of a white tunic girded by a leather belt, a white veil over the head and a black cloak or mantella.

The first young single girl to join the Mantellate was a blind and deformed girl named *Margaret of Metola* (1287–1320), the daughter of wealthy parents who abandoned her because of her physical afflictions. Margaret spent the majority of her thirty-three years devoting herself to the needs of others. She visited and nursed the sick and gave special attention to prisoners who were kept in underground prison cells without sunlight, fresh air, sanitary facilities or heat. These prisoners suffered from lack of food and clothing, from the stench, from "jail fever" and from the wounds inflicted by their chains. Only the few who could afford to bribe their jailors received the bare necessities of life when these were obtainable. Yet every day, Margaret and her white-robed companions entered the prison armed with bundles of food, clothing, bedding, and medicines.

St. Catherine of Siena was born Catherine Benincasa, the twenty-fifth child of a well-to-do merchant and his wife. Catherine became a forceful, gifted, clear-thinking and diplomatic leader and writer. At the age of eighteen, joining the Mantellate and receiving the habit of the Third Order of St. Dominic, Catherine began her many works of mercy.

St. Catherine has been noted for the kindness and tenderness which she extended to persons with the most loathsome of diseases. When a poor woman with leprosy was refused admission to a hospital, Catherine begged that the woman be admitted, promising to care for her.

During the epidemic of the bubonic plague, the shadowy figure of Catherine could be seen going around the streets of Siena at night. With a lighted lantern she would look for forsaken victims so that she might comfort them. She ministered to the plague victims who were hospitalized. Mrs. Curtayne depicts Catherine carrying a bottle of cologne and bringing some refreshment into the stench of the hospital rooms. Catherine rallied her friends and they, too, "braced themselves to bend close to the livid, swollen faces, choking down the nausea of that pestilential odour."[6] There was very little to be done for these plague victims; to be willing to stay with them and comfort them was a supreme sacrifice.

Figure 109. St. Catherine of Siena. (Courtesy of Will Ross, Inc.)

Catherine of Siena's influence has been great.[7] Even Swinburne, the English poet, praised her accomplishments in his poem, "The Laud of St. Catherine:"

> Then in her sacred saving hands
> She took the sorrows of the lands,
> With maiden palms she lifted up
> The sick time's blood-imbittered cup,
> And in her virgin garment furled
> The faint limbs of a wounded world,
> Clothed with calm love and clear desire,
> She went forth in her soul's attire,
> A missive fire.[8]

SECULAR NURSING ORDERS

There were other groups of workers who joined together yet were not bound by vows to monastic life. These members could terminate their vocations at any time and either return, settle down to married life, or devote themselves to any other occupation. Such groups have been referred to as *secular nursing orders,* and they visited the sick, took care of foundlings and orphans and brought the sick to hospitals.

The *Order of Antonines,* or Hospital Brothers of St. Anthony, was founded about 1095. This group of laymen specialized in the care of patients suffering with a disease called St. Anthony's Fire, probably erysipelas. Special hospitals were built for the sufferers of this disease, and the Antonines were successful in isolating the patients and preventing further spread of the disease. Pavey[9] states that after the religious orders in England were subdued these special hospitals ceased to operate. Not only did the scourge of erysipelas return, but puerperal fever became a devastating problem for obstetrical patients.

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[6] Curtayne, Alice: *St. Catherine of Siena.* New York, The Macmillan Co., 1929, p. 75.

[7] Since 1920 a group of students in Siena have banded together to form an international society, the Societa Internazionale di Studi Cateriniani, and publish bulletins devoted to literary and artistic endeavors pertaining to St. Catherine. A Chair of Catherine Studies has been established at the University of Siena.

[8] Brown, E. K.: *Victorian Poetry.* New York, Thomas Nelson & Sons, 1942.

The *Beguines* of Flanders, Belgium (1184), were one of the most prominent of these secular nursing orders for women. Lambert le Begue, Bishop of Liege, was impelled by the belief that a person could live a religious life by devoting himself to good works without joining one of the established religious orders of the church. He suggested the founding of this community of women who would live together without taking vows or giving up their property or possessions. They were free to leave the group at any time or to marry.

The Beguines erected communal hermitages known as "Beguinages" on the outskirts of towns. These communities were arranged on a cottage plan, grouped around one large central structure, usually the church. Each cottage accommodated from two to four persons. The Beguinages at Bruges (*ca.* 1184) and at Ghent (*ca.* 1234) are well known.

Each new member received her preparation under a more experienced member on an apprenticeship basis. These women devoted themselves to the needs of widows and orphans of the Crusaders. They pooled resources for they did not accept payment for services to the sick.

The Beguines devoted themselves to the care of the sick and were noted for their ministrations during war, famine and epidemics. They converted their houses into hospitals and worked as volunteer nurses. They distributed food and clothing during such catastrophic occasions as the Napoleonic Wars and the epidemic that followed, during the cholera epidemics and during the famine and industrial crises of the nineteenth century.

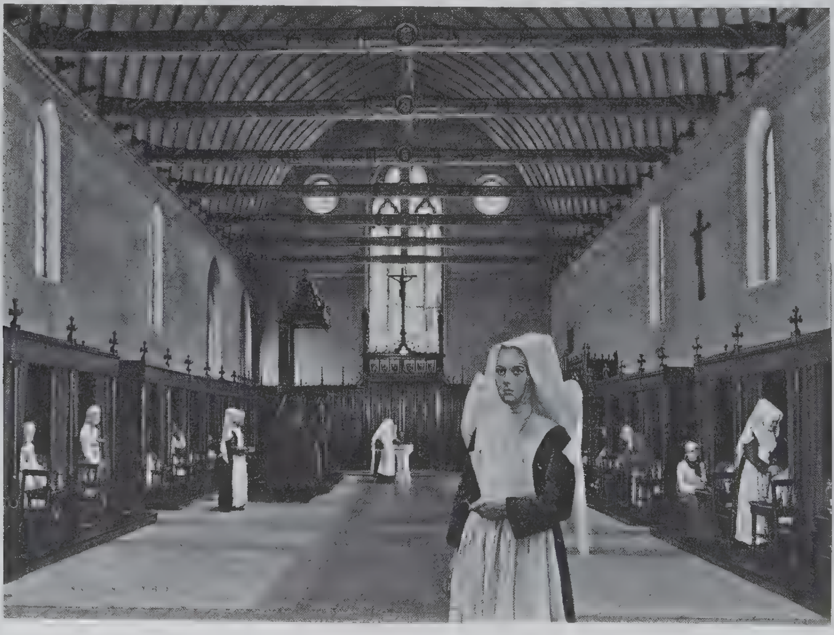

Figure 110. Medieval hospitals. © 1958 by Parke, Davis & Co.

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[9] Pavey, Agnes: *The Story of the Growth of Nursing*. Philadelphia, J. B. Lippincott, 1953, p. 177.

The Beguines built a hospital close to the Beguinage and established an order of sisters called the Sisters of Matilda to staff these hospitals. One of the most famous of these hospitals is the Hôtel Dieu at Beaune which was founded in 1443. Although the primary work of the sisters was nursing in the hospital, they did give care to the sick of the community in their homes, staying with the dying and consoling the families of the bereaved.

The desire of women to join such a philanthropic project is apparent when we realize that by the end of the thirteenth century there was hardly a community that did not have a Beguinage, many of the larger cities having several, and the Beguines numbered about 200,000.

An order of men, the *Brethren of the Common Life,* was founded at this time by Gerhard Groot. These men devoted themselves at first to the care of the sick poor and visited them in their homes. They were interested chiefly in teaching children who were bedridden. After a time they became the schoolmasters of the period, and such well known persons as Erasmus and Thomas à Kempis became members.

The *Sisters of the Common Life* specialized in the care of the sick, of which instruction of sick children was an integral part. These sisters took no vows, lived together in a conventual plan, and could leave the group at any time.

The *Misericordia,* founded in 1244, was another group of religious laymen. Their chief contribution to medieval society was the volunteer ambulance work that they carried on in many Italian cities. The Misericordia are sometimes known as the "Masked Brotherhood" because of the masks which they wore on duty. It is believed that this group felt that their unique contribution would gain spiritual merit if they prevented themselves (the giver) from being recognized by others.

The Italian city of Florence still boasts of the benevolence of the Brothers of Misericordia. In 1961, it was reported[10] that 2,500 members devote at least an hour a week for the charitable purposes of caring for the sick and needy. In their headquarters at the Piazza del Duomo assemble men of this brotherhood who come from all walks of life including doctors, lawyers, students, civil and public servants. These brothers are prepared to assist the afflicted any hour of the day, for a carefully planned rotational schedule allows for a staff of twenty men on duty at every hour of the day or night.

The black-robed brothers are respected and admired for their great acts of charity. Although they wear the same identifying robe, the hood is no longer pulled down over the face today except during the funeral of one of the members.

Towards the end of the twelfth century, the *Order of the Holy Ghost* was founded in connection with the famous medical school at Montpellier in Southern France. The medical school was granted a charter in 1180, and the Order nursed the poor in homes and hospitals and were in charge of nursing at the Santo Spirito Hospital in Rome.

The Alexian Brothers, formed during the scourge of the bubonic plague in 1348, was a group of laymen united to care for the plague-sufferers. They undertook the burial of the dead. In 1469 this group was organized under Augustinian rule and took as their patron saint St. Alexius, a fifth century Roman, who nursed the sick in the hospital built by St. Ephrem at Edessa. This order continues to serve the sick and has an enviable record of accomplishments.

The Alexian Brothers' Hospital School of Nursing in Chicago is the largest all-male nursing school in the United States. They maintain and staff several large gen-

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[10] *The Voice of St. Jude,* January 1961, pp. 24–28.

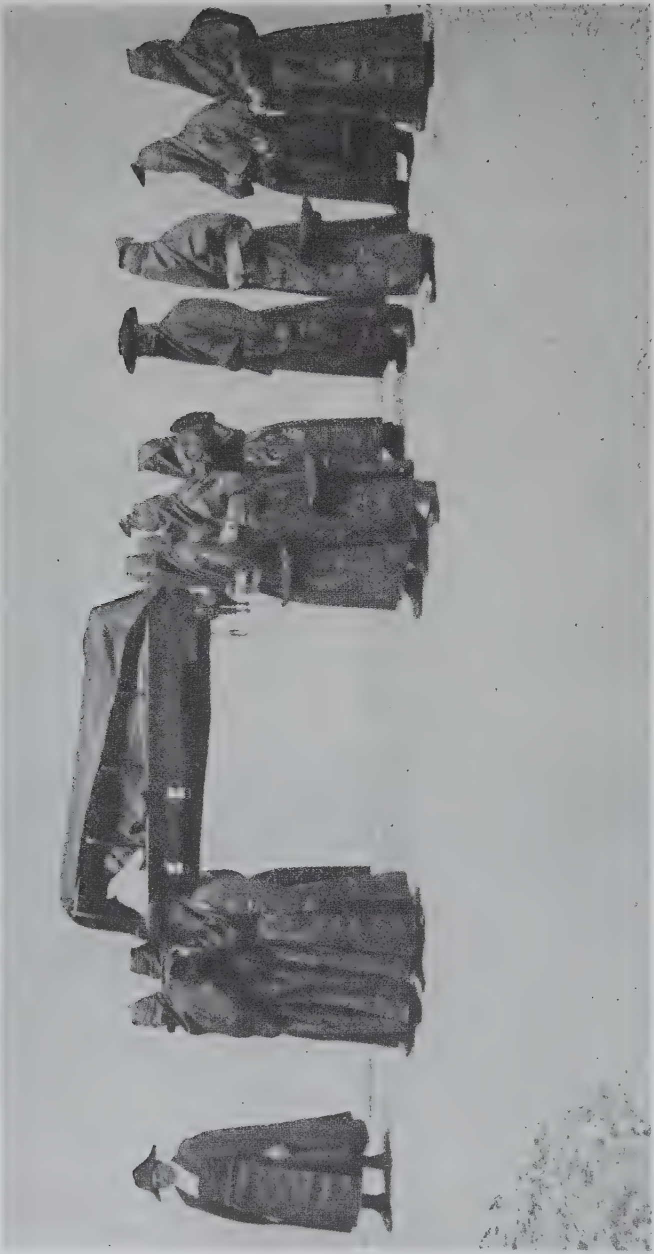


Figure 111. The Brothers of the Misericordia taking a patient to the hospital in Florence.

eral hospitals for men and boys as well as a rest home and home for elderly men. Memorial Hospital and Clinic at Boys Town, Nebraska, is also staffed by the Alexian Brothers. Nursing is only one of the many fields in which the brothers serve for the betterment of society.

INDIVIDUAL NURSES

Besides the part that organized groups played in the philanthropic endeavors of this period, there were also certain individuals who set examples or molded the thinking in the field of nursing.

St. Hildegarde, one of the most erudite women of the Middle Ages, was born of noble parents and at the age of eight was sent to be educated to the Benedictine cloister at Disibodenberg. At the end of her schooling, Hildegarde entered this monastery and years later became its abbess. She also founded another Benedictine cloister near Bingen on the Rhine.

Hildegarde was a scholar and absorbed eagerly the vast amount of scientific writings that had been accumulated in the monastery. The fruits of her labors appeared in a series of books, some of which were concerned with theological subjects but at least two were related to the field of medicine: *Liber Simplicis Medicinae* and *Liber Compositae Medicinae.* These books were assumed to have been written for the nuns in charge of the infirmaries in the numerous Benedictine monasteries. There was a need for such references, for these infirmarians were not only responsible for

Figure 112. St. Hildegarde. (Bosk, J.: *Patrons of Our Names in Word and Picture*, Neuland Verlag.)

the care of the nuns but cared as well for sick travelers who stayed at the convent guest houses.

In the sixteenth century the first of these books was edited under the title *Physica St. Hildegardis*. It contained nine books. The second volume, consisting of five books, presented the general diseases of the human body and the causes, symptoms and treatment of diseases. It was a compendium of information based on scientific investigation. Hildegarde discussed the vibration and pulsation of the blood in the veins; the regulation of vital activities by the brain, spinal cord and nerves; and the importance of understanding normal and abnormal psychology.

Her accumulated knowledge encompassed medical science, nursing, music, herb gardening, natural science, accompanied by a spiritual and religious philosophy of fantastic scope. Her books indicate her constant educational pursuits as well as her original thinking. Her medical works were written between 1151 and 1159, when she was nearly sixty years old.

She was skilled in understanding the politics of the day and even predicted consequences that would occur, such as the fall of the German Empire, the turbulence of the Papacy, and the coming of the Reformation. She corresponded with prelates, princes, and other persons of high as well as lower stations of life.

St. Hildegarde, who knew many things that were unknown to the physicians of her day, was both doctor and nurse—but her greatest accomplishments were in the field of contributions to the scientific foundation of medicine and nursing.

Hildegarde's works proved not only that the monasteries collected and housed the works of intellectual endeavors, but that their residents were encouraged to peruse these works and add to the accumulation of knowledge.

Abbess Euphemia, who was the director of a Benedictine monastery in Hampshire, England, from 1226 to 1257, was reputed to be a pioneer of modern hospital design. Euphemia designed the plans for an infirmary which contained beneath it a course of water, flowing with such force that all the refuse was carried away. This was a more attractive and sanitary infirmary than was noted in other areas during this period.

Cunegundes, a niece of St. Elizabeth of Hungary, married Boleslaus, the King of Poland. Cunegundes visited the poor and the sick in the hospitals, and she gave special care to lepers. After the death of her husband, Cunegundes entered a monastery of the Poor Clares.

Queen Elizabeth of Portugal, a grandniece of Elizabeth of Hungary, devoted her life to charity. She gave food and lodging to the poor; established a house for penitent prostitutes who were given special training so that they might reenter society as useful citizens; instituted a hospital for

Figure 113. St. Roch with the bubo on his left thigh. (Luini, *ca.* 1485–1532.)

foundlings and nursed the sick in the hospitals. At the death of her husband, Elizabeth joined the Poor Clares and died in 1336.

St. Roch was the son of the governor of the city of Montpellier in France. At the death of his parents when he was about eighteen years of age, Roch distributed his large fortune to the poor and set out on a pilgrimage. When he reached Italy, he saw the devastation caused by the bubonic plague and offered his services in nursing the sick. Roch contracted the disease but was cured miraculously, and in the several paintings of him the "bubo" of the disease can be noted on his leg.

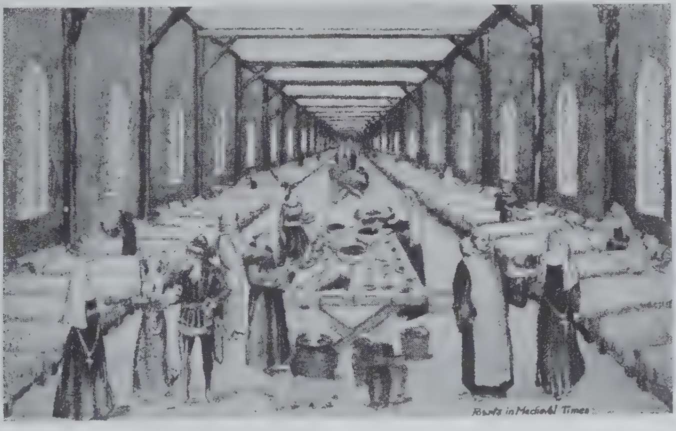
Queen Isabella of Castile married Ferdinand, King of Aragon. Isabella has been credited with having introduced the tent-type hospitals and ambulances for the injured on the battlefields. She visited and cared for the wounded and showed skill in caring for the sick.

ORGANIZATION OF HOSPITALS

We have mentioned that crowded living conditions and an increase in the spread of disease caused a demand for more hospitals, for the existing ones had been organized as almshouses, orphanages and hospices for travelers, as well as accommodations for the sick. *Pope Innocent III* was a dominant force behind the movement to visit existing hospitals and then construct the necessary ones as efficiently and attractively as possible.

The first hospital in England was established at York and was built by Athelstane about 936. This was also a poorhouse and had a department for lepers. The daughter of Queen Margaret of Scotland, Queen Matilda (referred to as good Queen Maud), founded St. Giles' Hospital in 1101 as well as the Hospital of St. Katherine in London in 1148. The charter of this hospital included the opportunity for nursing the sick poor in their homes. Many centuries later, the Jubilee Institute for District Nursing adopted this charter. Women of noble birth did both the nursing in these hospitals and district work in the homes of the poor.

St. Bartholomew's Hospital in London was built in 1123 due to the encouragement of Rahere, formerly the king's jester, who became an Augustinian monk. *St. Thomas' Hospital,* also in London, was founded by Richard, the prior of Bermondsey, in 1213. Later this hospital was made famous when it was used by Florence Nightingale as the center for clinical experience for her stu-



Barts in Mediæval Times

Figure 114. Ward in St. Bartholomew's Hospital in medieval times.

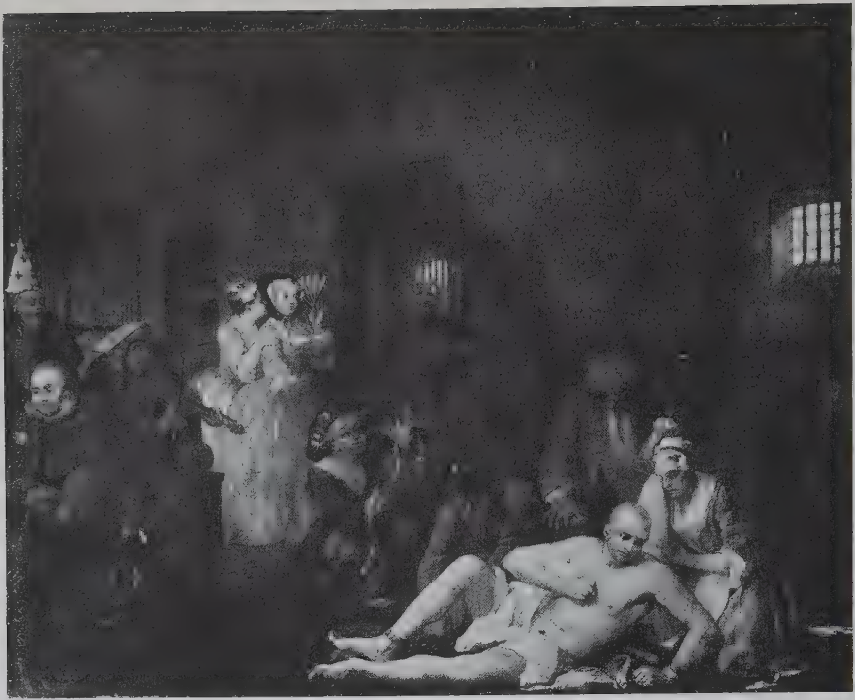


Figure 115. The Rake in Bedlam. (Hogarth 1697–1764). (E. H. Gombrich: *The Story of Art.*)

dents. This hospital and St. Bartholomew's were the only ones spared during the closing of religious monasteries, convents and hospitals during the Reformation.

Bethlehem Hospital, commonly known as Bedlam, was at first a general hospital, but in the latter part of the thirteenth century by the inclusion of several psychiatric units provisions were made for the care of mentally ill patients. In the fourteenth century Bethlehem was designed exclusively for the mentally ill, and the *Nursing Mirror* states: "In 1377 it became the first *lunatic asylum* in Britain and the second one in Europe."[11] This article mentions that when patients responded to medical treatment they were encouraged to go out into the streets and beg for their living. Wearing a metal armband which indicated their mental condition, these patients were called "Tom o' Bedlams." The article reports that the "violent ones who were interned were kept in chains and cells and treated with considerable inhumanity" because it was believed that these patients "had neither understanding nor feeling."

Patients who were mentally ill were received into wards in general hospitals for the "insane" or in separate buildings called "asylums." The word *asylum* implies security, but these asylums were more for the protection and comfort of the community than for the security of the patients. Centuries ago asylums were in effect prisons; our practice of having a person who is mentally ill committed to a psychiatric hospital by a judge or court is a survival of medieval methods. The care of the patient was custodial in nature and the attendants were chosen for their physical strength.

These mentally ill patients were treated as animals, often being half starved and kept under filthy conditions. For centuries their treatment was based on the idea that they felt neither heat nor cold. People had

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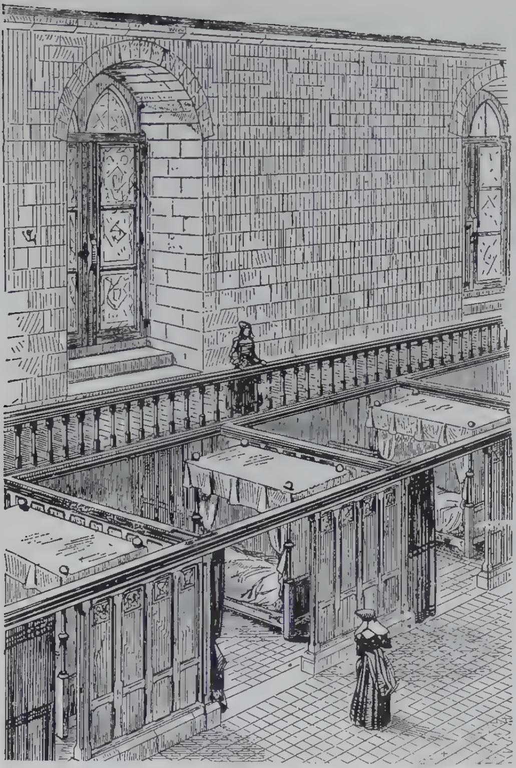
[11] "Oldest mental hospital in the world," *Nursing Mirror,* Oct. 22, 1954.



a fixed idea that they were possessed by devils or that they were being punished for their sins. Iron manacles and chains were used for restraint and there was a time when it was thought that fright and tortures were useful in driving out "madness;" this was the "shock therapy" of the period.

The *Hospital of Santa Maria della Scala* in Siena is of special interest because it was here that St. Catherine of Siena gave such valiant care to the plague sufferers. Her major efforts were directed to the patients who were in the attached house for lepers. This hospital continues to attract visitors because of its beautiful interior frescoes and artistic paintings.

It was the custom of this period to dis-

Figure 116. Ward in hospital founded in 1293 at Tounerre in France by Marguerite of Bourgogne, the sister of St. Louis IX. It was airy and well ventilated and had richly carved woodwork and beautifully colored stained glass windows.

Figure 117. One of the famous masterpieces of art at St. John's Hospital at Bruges. (Memling, *ca.* 1430–1494, St. John's Hospital. University Prints.)

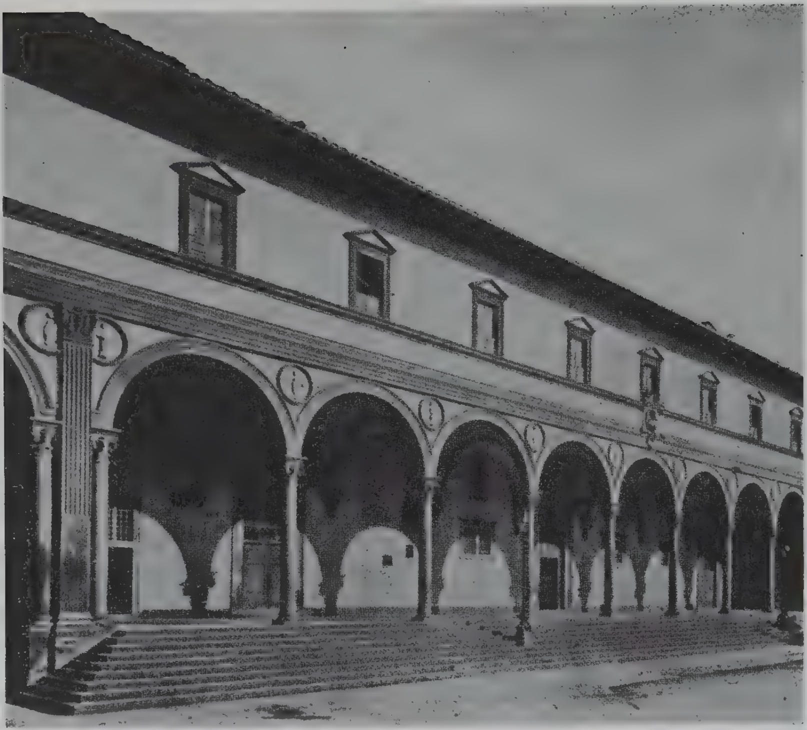


Figure 118. Foundlings' Hospital (Innocenti), Florence. (Renaissance, 1421, University Prints.)

play paintings in the hospitals to provide diversional therapy for patients. This was done at *St. John's Hospital* at Bruges in Belgium. Founded in 1118 by Augustinian monks and nuns as a hospice for travelers, St. John's has continued to serve the sick for eight hundred years. The older buildings are preserved as a museum,[12] but six masterpieces of the famous painter, Hans Memling, have made this hospital the envy of the world's art galleries.

The Hospital of the Innocents in Florence, another famous hospital, was built as a foundling asylum because of the large number of children who were abandoned and either left to die or become the property of the person who found them. The *Ospedale Santa Maria degli Innocenti* was built in 1451 with the financial assistance of the

Figure 119. Bambino. (Andrea Della Robbia, 1435–1525, Hospital of the Innocents, Florence. University Prints.)

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[12] Pastore, Evelyn: "Saint Jean's of Bruges," *R.N. A Journal for Nurses,* Dec. 1956, pp. 36–41.

guild of silk merchants. This hospital exemplified beautiful architecture and was adorned with the famous medallions of Della Robbia. A type of foster-parent plan whereby new parents had to promise to treat the orphans as their own children was instituted in the Ospedale Santa Maria. Either the hospital or the new families taught the children trades and provided the girls with dowries. This hospital is administered by the Sisters of Charity of St. Vincent de Paul.

GUILDS

The *guilds,* associations of workmen and tradesmen, were important factors in the Middle Ages. Divided into the three categories of apprentice, craftsman and master craftsman, these guilds protected the worker, the product and the buyer.

The guild was the predecessor of the modern labor union. However, there is an essential difference between these two organizations: in contrast with those in the labor union, the guild members could be independent contractors and hire apprentices. Guild members, therefore, could become employers while still workers and sellers of their own craft. They hired and taught while they worked, and sold the products of their labors.

UNIVERSITIES AND LEARNING

A special kind of guild, the *university,* was composed of teachers and students united for the purpose of study. The universities developed in different ways. At Bologna during the twelfth century a group of students interested in studying law hired tutors; while at the University of Paris teachers gathered and the students came to them like young apprentices to the trade of learning. Upon graduation from the medieval university, the student was recognized as a master and had the privilege of teaching. The teacher at one of the first universities had no fixed salary but was paid by each student for his instruction.

Our modern universities have some characteristics of the medieval university such as academic robes, ceremonies and degrees.

The founding of universities was a cultural achievement of monumental significance. As there were few institutions of learning, students traveled great distances, first to the schools connected with the monasteries, then to the cathedral schools[13] and finally to the universities.

Latin was the universal language used for the teaching in all schools. Thus, it was easy for teachers to give and students to accept knowledge, regardless of one's national background. In a footnote in his book, Riesman states that in "Germany, professors of medicine lectured in Latin until the nineteenth century. Schoenlein, in 1840, was among the first to lecture in German."[14]

The curriculum in the universities emphasized the seven liberal arts: rhetoric, grammar, logic or dialectics, mathematics (including geometry), astronomy, music and metaphysics. The graduate departments of these universities consisted of philosophy, law, theology and medicine. Upon passing an examination, the student was awarded a bachelor of arts degree, and the master's and doctor's degree were given.

Learning flourished and an intellectual awakening was occurring. This stimulus

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[13] These schools were attached to the great cathedrals and were started by Charlemagne and his teacher Alciun. The most famous of the cathedral schools were those of Chartres, Notre Dame, Lyons, Metz, Tours, Rheims and Orleans.

[14] Riesman, David: *The Story of Medicine in the Middle Ages.* New York, Harper & Brothers, 1936, p. 375.

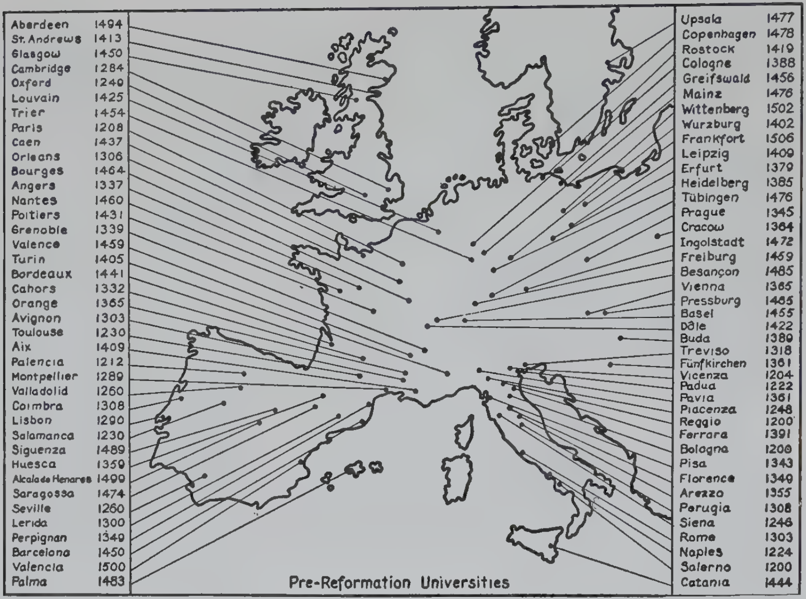

Figure 120. Universities of the Middle Ages.

was given added impetus by the invention of a movable type of print by *John Gutenberg* in 1438. Previous to this, books were copied laboriously, but with the printing press books became more readily available.

A renaissance occurred also in the fields of literature and art. Petrarch, Dante, Boccaccio, Cervantes and Chaucer wrote their literary masterpieces; thousands of singing poets, called troubadours, roamed the countryside; and religious plays[15] based on the life of Christ and on the lives of the saints were performed.

Because there were still few books available for instruction, these plays were useful for teaching purposes. Another audiovisual technique used for education was the use of puppets. These animated figures portrayed Biblical characters or the saints and were devised in an ingenious manner. Some of the madonna puppets shed tears while blood actually exuded from the figure on the crucifix. The puppets portraying the Virgin Mary in the Italian companies were called Mariolettes while the French called them Marionettes, the name now commonly used for the string-operated puppet.

Two other audio-visual media used for teaching were beautiful tapestries and magnificent stained glass windows; many were picture chronicles which told a story with liveliness and with exquisite color.

Many famous artists contributed to the fields of sculpture and painting, and their works remain as an indication of the cultural growth of the period.

The one woman during this era who asserted leadership was the famous Joanne of Arc.

MEDICINE

A renaissance did not occur, however, in the field of medicine because doctors had implicit faith in the ancient *humoral theory,* the four humors of the body—blood, phlegm, yellow bile and black bile. If one of these humors diminished or increased in quantity or changed in quality, disease occurred. Not only was the physical make-up of the person influenced by these humors but also his personality was affected by them.

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[15] The famous Oberammergau Passion Play is supposed to have started when the bubonic plague was carried to that city by a visitor. Untold havoc was caused, and the townsfolk promised to produce the play every ten years if the plague ended. See Crawford, R.: *The Plague and Pestilence in Literature and Art.* London, Oxford University Press, 1914.

Many doctors of this period were also firm believers in alchemy and astrology, the latter being based on the belief that the celestial bodies influenced the lives of men. (Many words still used have their origin in this belief. Such a word is lunacy.) The humors were supposed to be controlled by the planets, and one decided when to take medicine or when to be bled according to the astrological signs.

As in every age, there were several leaders in the field of medicine. Mondino de Luzzi (*ca.* 1270–1326), called *Mundinus,* was a graduate of the University of Bologna in 1306 and taught in the medical school. He specialized in anatomy, dissected bodies and completed a manual on anatomy in 1316 which was published in 1487. He assigned the actual dissection of bodies to an assistant while he counseled from his chair. A female assistant to Mundinus had remarkable skill in dissecting and injecting the arteries and veins with a different colored liquid which hardened soon. (This method must have been somewhat comparable to the lastex-injected animal specimens used today for teaching.)

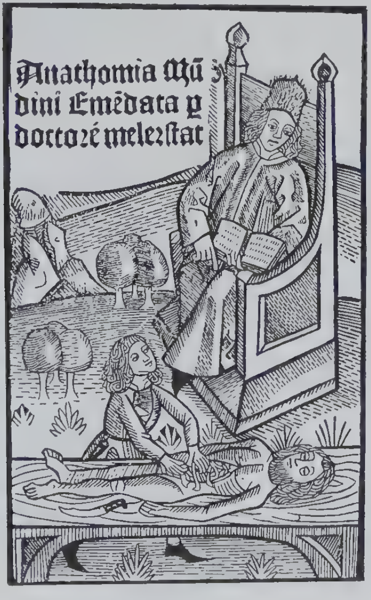

Figure 121. Title page of Mundinus' *Anathomia,* Leipzig, 1493.

Mundinus' dissection manual was used widely after the invention of printing, especially as a guide for medical students and students of art. (It is known that the artists of this era dissected bodies in order to paint more accurately.)

Guy de Chauliac (1300–1368), considered the greatest surgeon of the Middle Ages, wrote *Chirurgia Magna* which became a textbook of surgery. De Chauliac recommended surgical intervention for certain conditions of the skull, the chest and the abdomen, and set an excellent example by caring for plague victims while many other doctors fled from the scene. During his lifetime he became physician to three popes.

Antonio di Pagolo Benivieni (1443–1502), of Florence, contributed to the field of pathological anatomy by painstakingly collecting notes from his observations at autopsies. These notes were published after Antonio's death by his brother.

Cardinal Nicholas of Cusa, known as *Cusanus,* a skilled mathematician interested in natural science, suggested an ingenious method of measuring pulse rate. In this period time was determined by the ancient water-clock method which measured the intervals of time elapsing during the flow of a specific quantity of water. Cusanus' suggestion was to weigh the amounts of water which flowed during 100 pulse beats of a number of "healthy" individuals of the same age and build. This could be used as a standard, and devia-

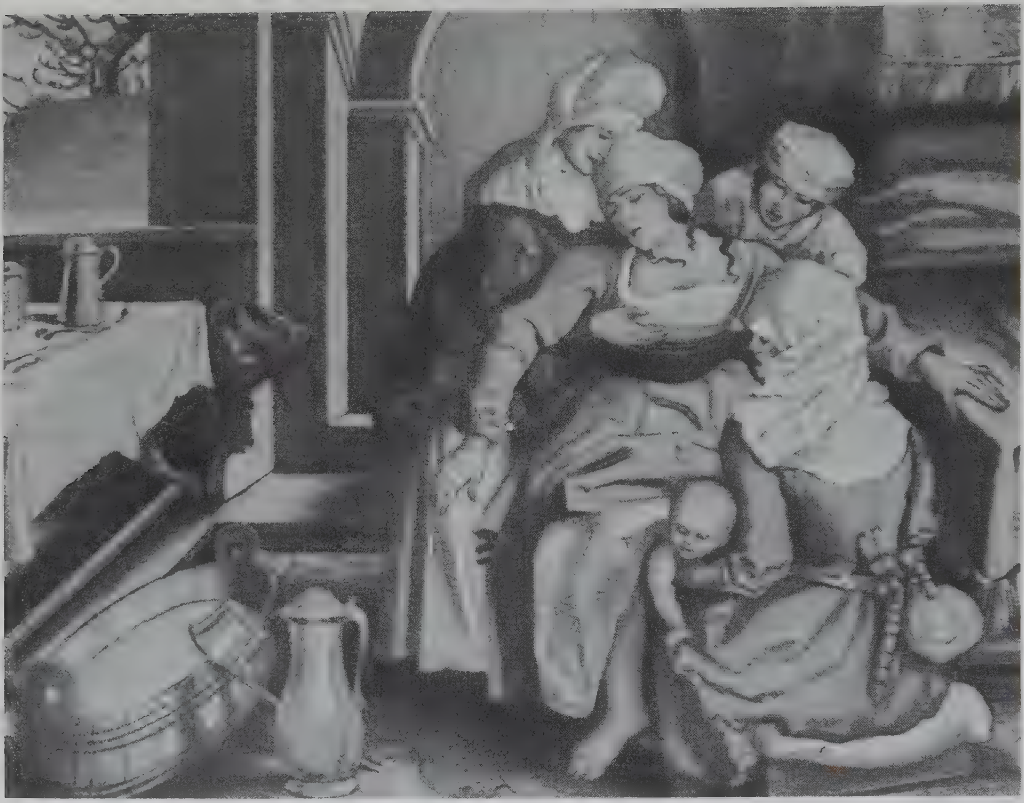

Figure 122. Delivery of a woman in the sitting position during the early sixteenth century. (Woodcut in "Cicero de officus," Augsburg, Steyner, 1531.)

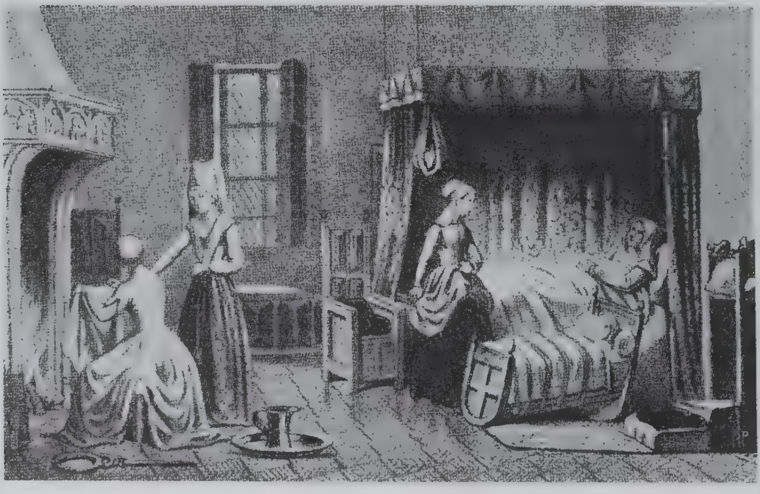

Figure 123. Obstetric ward of Dutch hospital in the fifteenth century. Note rooming in aspect.

tions could be judged by comparison with the normal pulse rate.

The guild system penetrated into the field of medicine. Many surgeons had delegated certain aspects of their work to barbers and midwives, a fact officially recognized by King Charles V in the thirteenth century when he granted to barbers the right to do bleeding and minor surgery. (Eventually this privilege was withdrawn by an act of Parliament.) The guild regulations on this privilege varied with the times and the localities. For example, Riesman notes that in 1415 in Florence "no one under the age of fifteen should be apprenticed to a doctor of medicine, to a surgeon, barber, midwife or any one else having to do with the sick. Apprentices were required to establish their reputation for honesty, morality, mental and physical fitness, and had to be natives of Florence and of legitimate birth."[16]

Obstetrics and gynecology were practiced by *midwives.* These women had developed their skill by observation and experience, for they had borne children. The paintings of this period frequently indicate the presence of the midwife and the nursemaid who cared for the baby. Often the nursemaid is shown using either her arm or foot as a thermometer to test the water before bathing the new baby. In difficult labor the midwife asked the advice of the physician, but he did not come to examine the patient nor to assume the duties of the midwife. Among primitive peoples delivery has been carried out in a squatting or sitting position, and in early days in Europe the obstetrical chair or v-shaped stool was used. Later, delivery in bed was the accepted method.

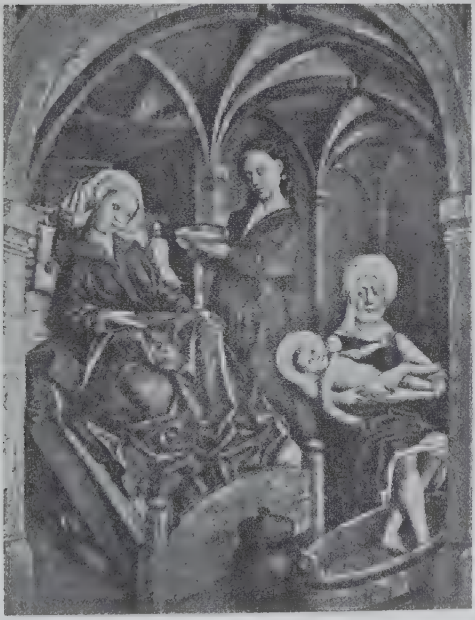

Figure 124. The human foot as a thermometer. (From Robert Müllerheim's *Die Wochenstube in der Kunst*, Stuttgart, 1904.)

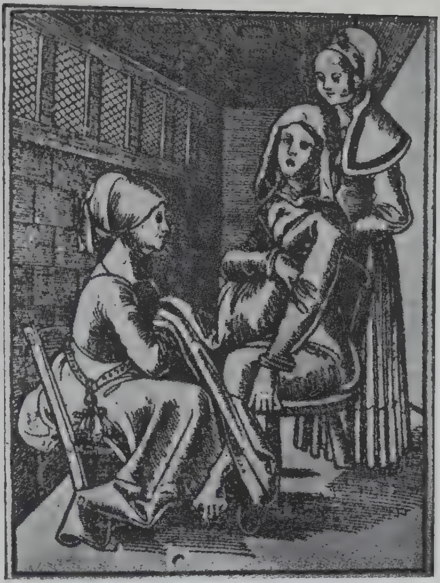

Figure 125. Medieval accouchement. (From Bihet's *Histoire du Nursing*, Editions Desoer, Belgium, 1947.)

TRAVEL AND COMMERCE

Italian merchants at this time were opening up new trade routes and eventually new commercial areas stimulated the desire to travel and to acquire exotic possessions.

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[16] *Op. cit.,* p. 229.

In 1245 a Franciscan, Friar John, travelling to the territory and to the throne of Kublai Khan by horseback, visited the court of the Tartars. In 1270 Marco Polo, the distinguished traveler whose name is connected with the mariner's compass and gunpowder, traveled overland to Peking and brought back awe-inspiring tales. Genghis Khan (*ca.* 1162–1227) had gained the original control of Asia, while his successor, Kublai Khan (*ca.* 1216–1294), had increased the possessions of the Mongols.

Marco Polo's tales from the Orient inspired an intensive search for new trade routes, which eventually led to the discovery of America.

In summarizing the progress of the later Middle Ages, we see that the Crusades stimulated the growth of the military nursing orders, unwittingly encouraged the spread of disease, and brought Europe into contact with Arabian medicine. The sudden spread of urban developments increased the possibility for cultural growth, but sanitary and hygienic conditions caused the spread of disease. Certain medical treatments, beliefs and practices were retained from earlier periods while new ones were added. Hospitals of historical interest were built; religious orders were formed and contributed many well known leaders and groups which specialized in the care of the sick. Travel and commerce flourished and acted as a culture medium for the development of new tastes and interests. Educational institutions were organized and learning flourished. Although there were accomplishments in such fields as art, architecture and literature, no striking achievements were noted in medicine; the real rebirth in this field occurred in the Renaissance.

Aids to Enrich an Understanding of This Period

I. Visit museums containing exhibits on the cultural aspects of the later Middle Ages, noting especially specimens of illuminated manuscripts, tapestries and stained glass windows.
II. Construct dioramas depicting the aspects of the care and treatment of the sick or a scene during the bubonic plague.
III. Prepare an outline for a handbook of instruction on care of sick for an army nurse during the Crusades, or for a nurse in civilian defense during the bubonic plague.
IV. Compile a series of well known masterpieces of art for this age.
V. Emphasize the costumes of this period by dressing dolls to represent the nursing leaders.
VI. Sketch the candidates from this era that should be included in the Album of Famous People, using your literary and/or artistic abilities.
VII. Prepare illustrated historical maps showing the newly developed trade routes.
VIII. Plan a chart listing readings in literature giving authors, setting and plot that relate to events and personalities in this era.

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VII

The Period of Renaissance 1500–1700

Figuratively, because the garden of learning had been cultivated, we may view now the many blossoms which appeared in an era called the Renaissance.

DEVELOPMENTS IN BIOLOGICAL SCIENCE AND MEDICINE

A renaissance took place in the field of *pharmacy* in the year 1240, when pharmacy secured a legal separation from medicine. By 1498 the first official Pharmacopoeia was written, published and became the legal guide for all pharmacists. In London, in 1617, King James I granted a charter to the newly formed society of pharmacists known as the "Society of the Art and Mystery of the Apothecaries of the City of London." This extricated pharmacists from the control of the Guild of Grocers, for drugs, spices and herbs, used by apothecaries, were brought from many lands and sold by grocers. This association had placed pharmacists under the influence of the merchant group; after 1617, however, pharmacists emerged as a distinct group of craftsmen.

In the field of *general medicine,* two leaders,

Figure 126. Little book, evidently intended to be carried by the medical student or physician, contained the teachings of Hippocrates, Galen and Avicenna. Date of publication is 1649.

Paracelsus and Sydenham, were preeminent.

Phillippus Theophrastus Bombastus von Hohenheim, better known as *Paracelsus,* was one of the most unusual men in medical history. Born in Switzerland in 1493 and educated by his father, a very learned man and a successful physician, Paracelsus[1] was a quarrelsome, argumentative person who was credited with igniting the fire of new thinking in the field of medicine. A successful alchemist who was well versed in astrology, Paracelsus formulated many unscientific medical theories as well as many that showed marked ability in guessing, intuition or clear reasoning. He opposed the humoral theory of disease; advocated the use in medicines of many chemicals, such as mercury, sulphur, iron and arsenic; and overthrew the old medical authorities by burning their books publicly and denouncing their authority.[2] In this way, Paracelsus paved the way for the growth of new ideas.

At the same time, there was an obvious need for knowledge of the human body followed by an intelligent study of its functions.

A very distinguished group of artists laid this foundation and presented accurate knowledge in the field of anatomy and physiology. These artists excelled their predecessors, the Greek artists, by not only presenting correct external proportions and appearances but by dissecting bodies to broaden their knowledge. Some of the great figures in the field of *medical art* were *Dürer, Raphael,* and *Michelangelo,* but probably the greatest of these was *Leonardo da Vinci.* Many are aware of his artistic contributions, especially his "Last Supper," "Mona Lisa," and "Virgin of the Rocks," but few are acquainted with the other facets of his genius. Da Vinci was also a sculptor, inventor, mathematician, architect and engineer. He planned a system of canals with locks to make certain waterways navigable; designed cities with two-level highways; constructed a machine for excavating; studied aerodynamic principles and presented ideas for a parachute and a flying machine which he called an ornithopter; and, he devised a rotating bridge and a revolving stage. Da Vinci's mind was astonishingly creative and he possessed the added gifts of manual dexterity and practical application which permitted him to implement his ideas.

It was small wonder that Da Vinci's keen powers of observation were turned to the structure and function of the human body. He dissected the body, and the findings which he recorded in his notebooks were masterpieces of accurate observation which expanded the knowledge of the human body in a remarkable fashion.

Andreas Vesalius (1513–1564), the son of the court apothecary to Emperor Charles V, was born in Brussels. He received his medical education at Louvain and at Padua where he became a member of the faculty. From early boyhood, Vesalius had been inordinately fond of dissecting and his first attempts were centered upon animals. In later life, this interest seemed to mount and cemeteries and places of execution yielded him the needed bodies. The results of Vesalius' painstaking research were presented in *De humani corporis fabrica libri septem* in 1543. This book was a masterpiece of care and accuracy and presented in clear, readable and visual form the representations of the dissected parts of the human body. Vesalius had established the position of scientific dissection; he had corrected previous inaccuracies, especially those of Galen, but he did not discover the circulation of the blood which he felt passed through holes in the septum from the right side of the heart to the left side.

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[1] The hero of Robert Browning's "Paracelsus."

[2] Medical science and medical teaching continued at this time to be based on the teachings of Hippocrates, Galen and Avicenna.

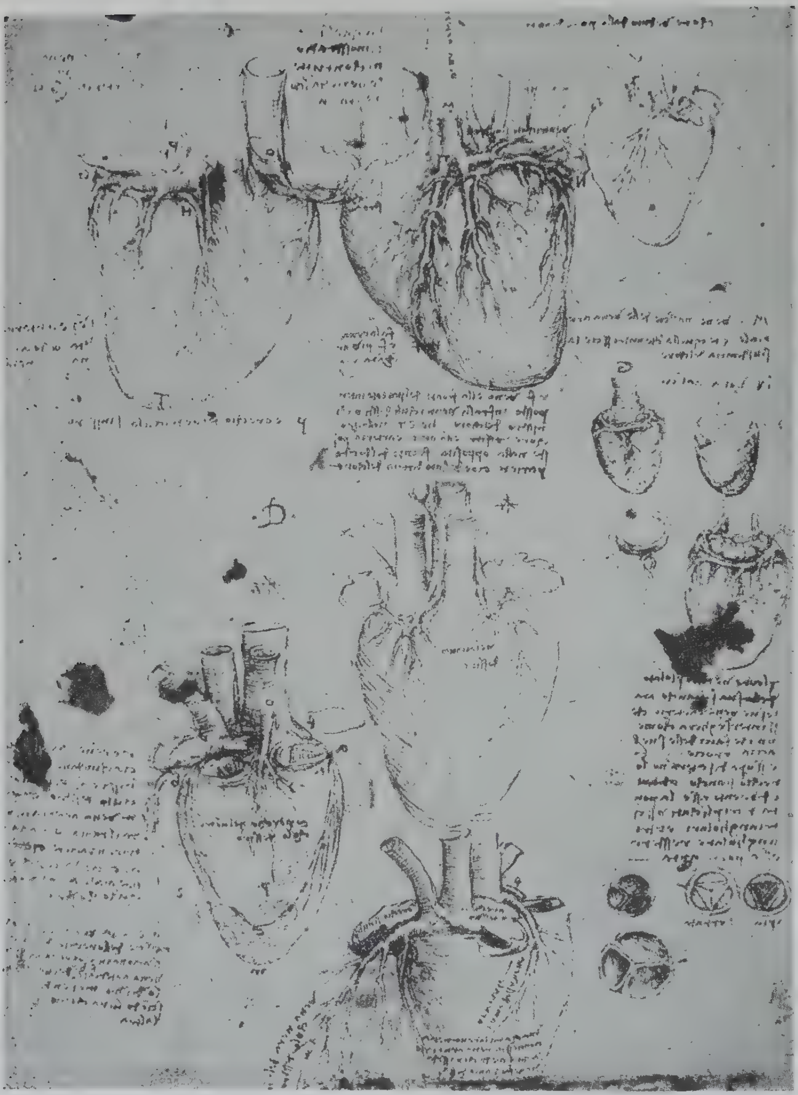

Figure 127. Drawings of the heart by Leondardo da Vinci.

Vesalius' brilliant career ended tragically. On a trip to the Holy Land, he was stricken with a fatal illness and died on the island of Zante in the Ionian Sea in 1564.

Anatomy became a subject of great interest at this time, as can be seen in the works of artists of the period.

In the field of *surgery,* the name of *Ambrose Paré* (1510–1590) shone. Paré started his career as a barber's apprentice, later became an assistant at the Hôtel Dieu and emerged a successful army surgeon. While on duty in the wars, Paré manifested the gifts that have made him one of the most outstanding surgeons in history.

Gunshot wounds were treated routinely with boiling oil at this time. Paré searched for a substitute and, realizing the injurious effect of this cruel treatment, discontinued its use. He invented many new surgical instruments; made amputation less traumatic by reintroducing the use of ligatures to tie off the blood vessels instead of cauterizing them or sealing the vessels with boil-

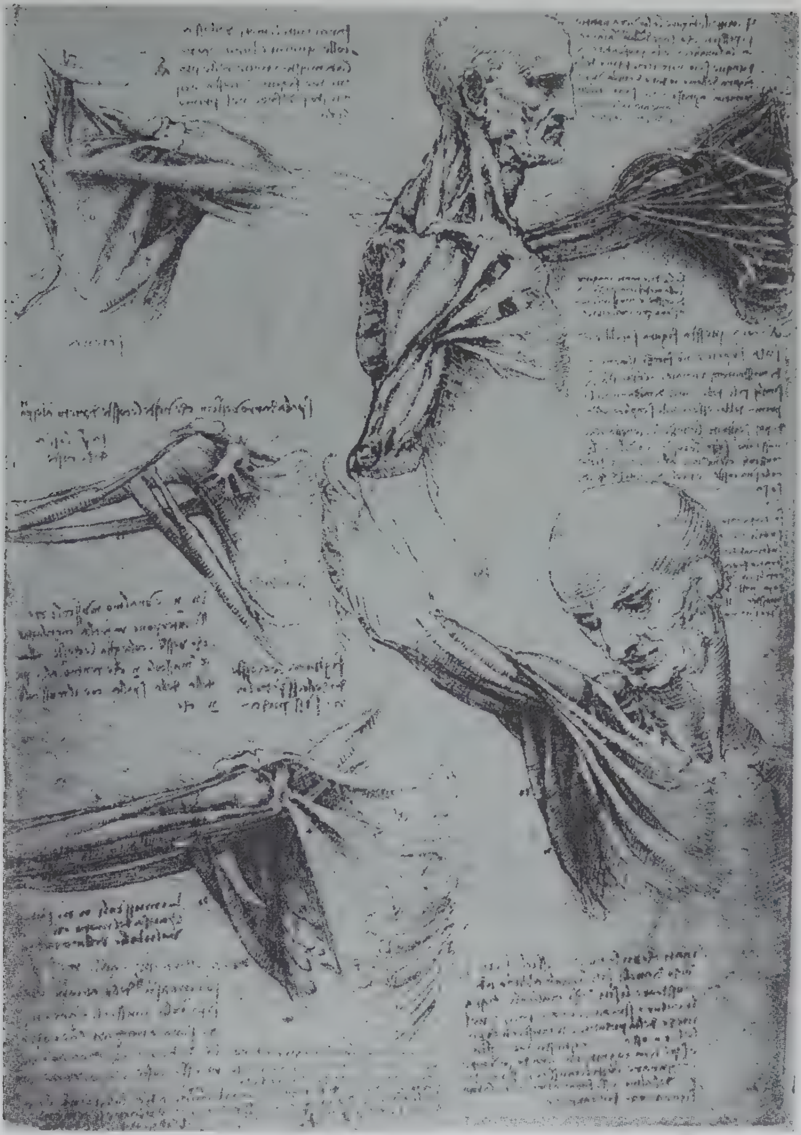

Figure 128. Drawings of the shoulder girdle by Leonardo da Vinci.

ing oil; introduced ingenious artificial limbs and belittled the value and use of powdered mummy and unicorn's horn as medicines. Paré is credited with saying, "I treated him, God cured him."[3]

The first authentically recorded successful blood transfusion on human beings was performed in June, 1667, by *Jean Baptiste Denis,* physician to Louis XIV, in Paris. The patient was a youth fifteen or sixteen years old who had some obscure fever. The boy made a remarkable recovery following the administration of nine ounces of blood from the carotid artery of a lamb.

An unusual turn of events occurred in legislation when France and England improved the status of barber-surgeons. The climax was reached in 1540 when Henry

[3] An interesting account of the life and times of Paré, as well as of the care of the sick in this period, can be read in Paget, Stephen: *Ambrose Paré and His Times.* New York, G. P. Putnam's Sons, 1897.

Figure 129. Andreas Vesalius (1514–1565). (Davis & Geck Co.)

VIII united the Barber Company with the Guild of Surgeons to form the United Barber-Surgeon Company with Thomas Vicary,[4] the anatomist, as the Master.

The surgeons, however, were not so fortunate in obtaining status as the pharmacists were in being relinquished from the Guild of Grocers.

The first *obstetrical forceps* were devised by a Peter Chamberlen in 1630 in England. For many years, the family told no one of their existence. A descendant sold the forceps for a very high price. The secret of the construction of the forceps was released ultimately, and they were made for the benefit of all women needing their use.

Santorio Santorio (1561–1636), a brilliant young man, devised instruments for *measuring temperatures.* He served for many years as physician to King Maximilian of Poland. Santorio corresponded with his colleague Galileo and applied some of Galileo's ideas to the field of medicine. Santorio has been credited with the invention of three thermometers—one to be placed in the mouth, another with a large bulb to be

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[4] Holbein has painted an excellent representation of this event showing Henry VIII giving the charter to Vicary and the surgeons accompanying him, all of whom are on their knees. This is an excellent representation of the costume of the surgeon of the sixteenth century.

Figure 130. Anatomy lesson. (DeKeyser [1596–1679], Ryks Museum, Amsterdam. University Prints.)

held in the hand and still another with a funnel into which the patient breathed. He noted also that the excretions of the body were less in volume than the food intake and realized that some of this loss was used in creating energy.

William Harvey (1578–1657) was the major contributor to the field of *physiology.* Harvey grew up in Elizabethan England and after graduating from Cambridge went to the University of Padua. This university attracted him because of the anatomical research conducted there since the time of Vesalius. Harvey worked diligently and, in 1628 he announced his discovery of the *circulation of the blood* with the publishing of his *Anatomical Disquisition on the Motion of the Heart and Blood of Animals.*[5]

Before Harvey's time, there existed many erroneous notions concerning the blood. Some of these held that the arteries were filled with air and/or spirits, that the veins carried nourishment, that fuliginous vapors were present in the arteries and that the blood did not circulate through the body but rather moved or rocked forward and backward. William Harvey's conclusions can be summarized as follows: the blood moves in a continuous onward direction from the right side of the heart, through the purification system in the lungs, to the left side of the heart whence it is pumped in one direction through the arteries of the body and back to the heart through the veins. The interlacing network of capillaries that formed the connecting link between the arteries and the veins was not described.

Harvey demonstrated excellent research techniques by his careful, painstaking and

[5] Excercitatio anatomica de motu cordis et sanguinis in animalibus.

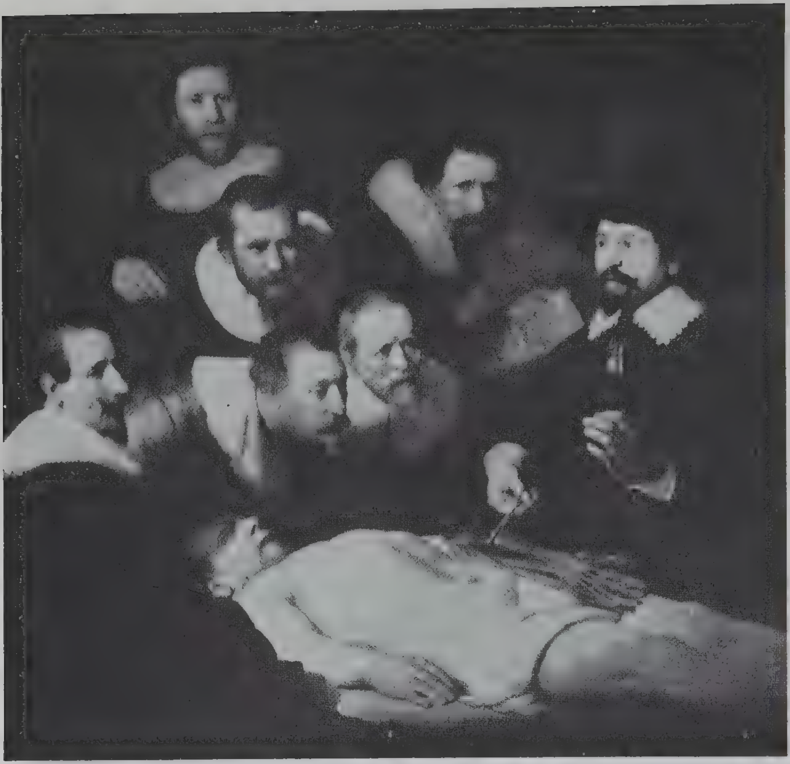

Figure 131. Dr. Tulp's anatomy lesson. (Rembrandt von Rijn 1606–1669. University Prints.)

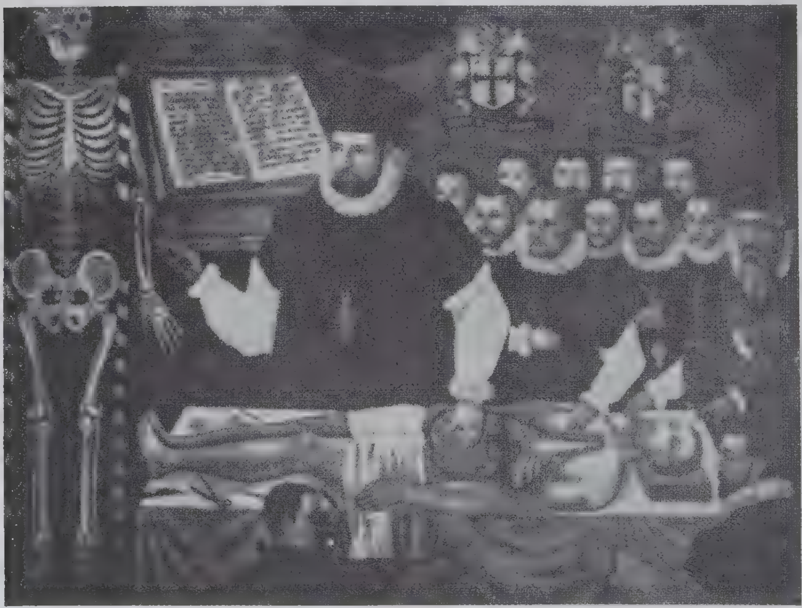

Figure 132. Dr. John Barrester delivers the Visceral Lecture at the Barber-Surgeons' Hall (London) in 1587. Note the opened book above the lecturer, the skeleton supported by the striped barber poles and the armorial crests of the United Barber-Surgeons' Company.

logical method, and his contribution was of great importance.

Marcello Malpighi (1628–1694), using the newly discovered microscope, reported his observation of the *capillary circulation* in the lungs and mesentery of the frog. This was the important link needed to understand the circulatory system of the body. Another achievement of Malpighi was the discovery of the *red blood corpuscles* (which he mistook for fat cells) in the blood stream (1665).

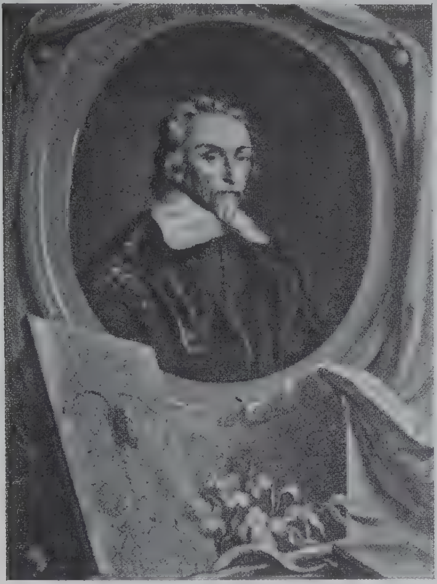

Figure 133. William Harvey, after a painting by William van Bemmel (1698–1780), engraved by Jacob Houbraken, 1739.

The *microscope* was invented probably by Johannes Jansen of Holland about 1590; Galileo was supposed also to have constructed a microscope, as well as a telescope, about 1625.

Athanasius Kircher (1602–1680), born in Germany, was educated at Fulda and became a Jesuit priest. His interests were many, as seen in his literary achievements, numbering in the forties, on widely different subjects. One of these works described the wonders of nature revealed to him by means of the microscope. He noted the innumerable "worms" in vinegar and milk, and the countless animalcules in pus and blood which were invisible to the naked eye. Father Kircher was very likely the

Figure 134. Harvey explaining his doctrine of the circulation of the blood to Charles I. After a painting by Robert Hannah, exhibited in 1842 at Royal Academy in London.

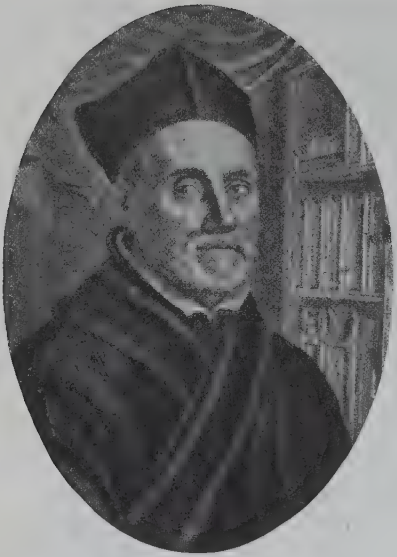

Figure 135. Athanasius Kircher (1602–1680).

first scientist to use the microscope in investigating the causes of disease.

Anton van Leeuwenhoek (1632–1723), who was born in Delft, Holland, has been noted for improving the microscope and for identifying certain types of bacteria. Leeuwenhoek had not received a university education or any preparation in medicine. In his leisure he ground lenses, constructed microscopes, studied the objects of nature and drew diagrams of what he observed; in doing this, van Leeuwenhoek established the basis for the foundation of the field of bacteriology.

Scientists of this era were debating and studying the theory of *spontaneous generation.* An Italian naturalist, *Francesco Redi* (1626–1697), contradicted the idea that living matter such as maggots could spring from nonliving matter. He carried out a controlled experiment by placing meat in jars, some uncovered and others covered with parchment and gauze. In a short time maggots appeared on the uncovered jars of meat but not on the covered ones. However, Redi's testimony was not accepted by his contemporaries.

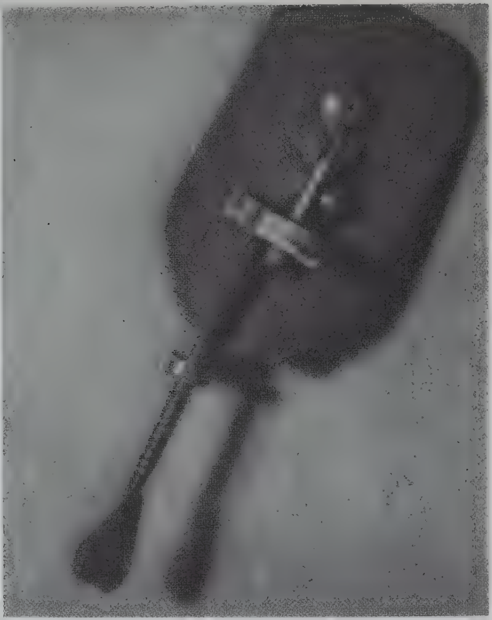

Figure 136. Replica of a microscope made by van Leeuwenhoek. The tiny hole holds the single lens. That which is to be viewed is placed on the spike which is adjusted by the screw.

Thomas Sydenham (1624–1689) was a physician who contributed to the field of general medicine. Sydenham was a true follower of Hippocrates, stressing the need for careful observation of the patient, observing symptoms and treating each person's illness on an individual basis. He did not follow the current medical practices completely but used independent thinking. Sydenham advocated fresh air in sickrooms, for windows were not only kept closed at this time but were concealed by heavy draperies; he encouraged patients with tuberculosis to get fresh air and sunshine by horseback riding; he recommended the simplification of prescriptions (which sometimes had filled two and three pages with lists of ingredients), and discarded the useless ones; and he gave a detailed description of prevalent diseases. Sydenham was an eminently able practitioner using the best of the past in his treatments.

Figure 137. The Sick Girl. (Steen [1626–1679], Ryks Museum, Amsterdam. University Prints.)

DEVELOPMENTS IN SOCIAL SCIENCE AND NURSING

The sixteenth century also witnessed another movement—the *Reformation,* which started as a reform and ended as a revolt producing a cleavage in Christianity. The religious vigor of the preceding centuries had waned and the practical application of spiritual teachings was not so apparent in daily living. Martin Luther and his followers, who revolted in about 1517, brought about the inception of the Lutheran Church in 1526. In England, Henry VIII was instrumental in organizing the Church of England in 1534, while John Calvin formulated the principles of Calvinism in 1536. Successive groups have continued to carry on the Reformation until today in the United States there are many different Protestant denominations.

St. Ignatius Loyola (1491–1556), the founder of the Jesuits, instituted the needed counter-reform in the Roman Catholic Church.

From the time of the Protestant Revolt the charitable organizations such as hospitals were permitted no longer to function and nursing entered a period often referred to as the "dark ages of nursing." The "reformers" suppressed the Catholic religious orders under whose charge the hospitals had been operating. Since there were no substitute staffs, hospitals became places of horror and a period of stagnation ensued. Much has been written about the squalor of the hospitals and the inferiority of their attendants. During the bubonic plague in London in 1665, these attendants were described as "dirty, ugly, unwholesome hags."

When Henry VIII closed the monasteries, it was the aged, the sick, the orphans, and the dispossessed who suffered the most. The English government wiped out the organization of monastic relief without planning a replacement.

Many died of starvation while the homeless and destitute resorted to begging. A statute against vagrancy was issued by Edward VI. If a person was discovered begging, he or she was branded with a red hot iron with a letter B on the chest. If a person reported the vagrant to the authorities, he or she became the slave of the informant. The owner was granted the right to beat, chain, or force him to labor in whatever manner he desired. Orphaned children could be retained as apprentices to whatever person found the child. These children could be chained if the master so desired.

Queen Elizabeth passed the first English Poor Law prescribing a compulsory poor tax on every parish. The relief of the poor was no longer an individual problem dependent for solution upon voluntary acts of Christian charity but a national duty exacting a compulsory contribution toward its alleviation.

In 1552, a committee was appointed to study the problem of poverty in London. Records reveal that some people were so poor that mice was one source of food.

In 1557, rules were formulated by which the charitable institutions for the sick poor were to be managed. Under this system, many hospitals became "houses of correction." Any patient able to work was recruited for service and the work day extended from five o'clock in the morning to eight o'clock in the evening.

In 1597, the poor laws were revised again since the problem of vagrancy continued. In an attempt to rectify this situation, vagrants were whipped until their bodies were bloody. For the second offense, the person was sent to the galleys to be chained in boats as an oarsman. Slavery was encouraged. The philosophy of seeing Christ in the least of these brethren had been forgotten. Even the sick poor in hospitals were referred to as objects of charity.

Warfare, such as the *Thirty Years' War* (1618–1648), famine, and plague still ravaged Europe. Devastating outbreaks of typhus and bubonic plague occurred. As a result of the latter, Germany lost from one half to three quarters of her population. It was during this period (in 1665) that the bubonic plague reached England.

When a person contracted the plague, the house was boarded up with the well members forced to become prisoners with the sick one. Fires were ordered to be kept

Figure 138. Visiting the sick in the seventeenth century. (Annie M. Brainard; *The Evolution of Public Health Nursing.*)

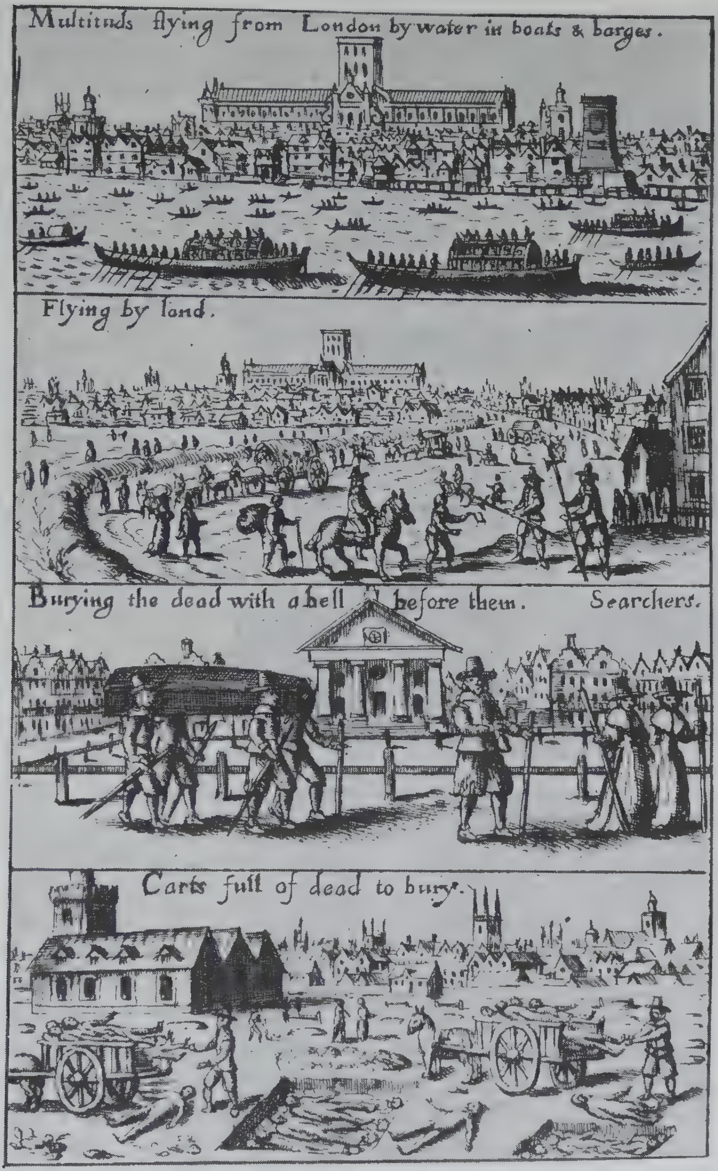
Multituds flying from London by water in boats & barges.
Flying by land.
Burying the dead with a bell before them.
Searchers.
Carts full of dead to bury.

Figure 139. Plague Scenes in London, 1665. (Caraman, Philip: *Henry Morse, Priest of the Plague*. Farrar, Straus & Cudahy, 1957.)

burning in the streets, one before every sixth house, for three days, continuously, to purify the air.

Plague physicians wore a long red or black leather gown, leather gauntlets, and a mask with glass-covered openings for the eyes and a long beak filled with fumigants and antiseptics.

Elaborate precautions were taken in the burial of the dead, at night. Dog catchers prowled the streets, killing stray dogs and removing their bodies for burial. The huge mounds of earth are mute testimony to the plight of the English during this scourge. In one of these mounds 50,000 bodies were said to be interred.

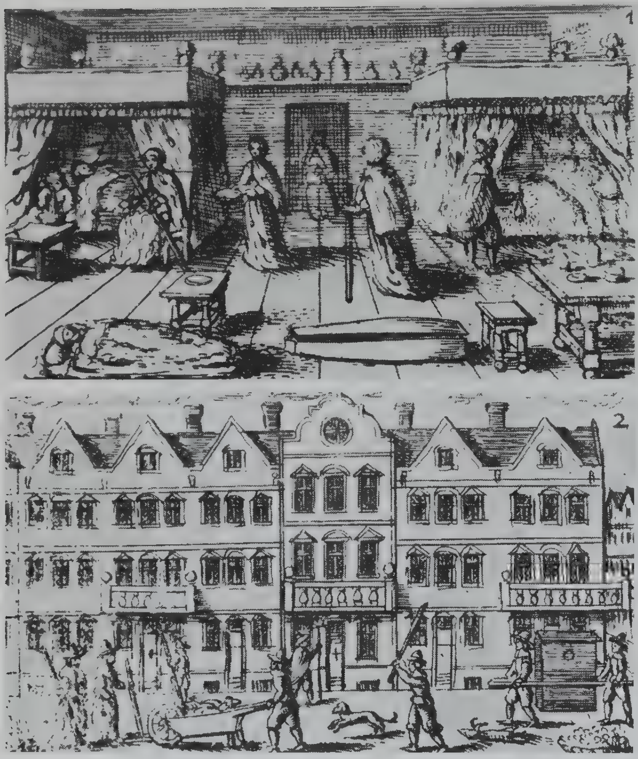

Figure 140. Plague scenes. *Above*, a room in a plague-infested house. Several sick patients are in bed, one walks around the room and, in the foreground, a corpse is ready to be placed in the coffin.

Below, a row of London houses boarded up with red crosses on the locked doors. This is an example of enforced quarantine. Two bearers are carrying a sick person to the pest house in a sedan chair. Dog catchers are killing dogs and loading them in wheelbarrows. (Caraman, Philip: *Henry Morse, Priest of the Plague*. Farrar, Straus & Cudahy, 1957.)

Hospital service was inadequate; many people died on the street. There was a need for organized charity.

In France, no longer could workers carry on their trade in their own homes. The artisan now lived on back streets or slept in the attic of his master, often going to bed hungry. His working day was a long one sometimes seventeen continuous hours.

In this period of marked intellectual enlightenment and achievement, it is noted that the knowledge of hygiene was poor. People bathed infrequently although there were many famous medicinal baths. The value of fresh air was not understood or appreciated. When someone was ill, the doors and windows were closed for fear of cold and draughts. Another unfortunate occurrence was the *window tax* which fostered the spread of disease because hundreds of hospital windows plus those in homes were blocked up or bricked over to save money. There were those whose standard of living was much higher, whose homes were comfortable and less unsanitary and whose diet was better balanced.

In the sixteenth century, infants were commonly breast-fed, but wet-nursing was available, and baby farming was a notorious evil. The exceedingly high infant mortality rate was due to extremely poor public and personal hygiene. Cities had no drainage; filth and infection were rampant.

The medical treatment given during this period might be revealed in a consideration of the treatment given to King Charles II in 1685:

A pint of blood was removed from his right arm, then eight ounces from his shoulder, and then in succession he was given an emetic, two physics, and an enema containing fifteen substances. Then his head was shaved, a blister was raised on the scalp, a sneezing powder was given to purge the brain, then cowslip powder to strengthen it. Meanwhile, more emetics, soothing drinks and still more bleeding was continued followed by plaster of pitch and pigeon dung applied to the royal feet.

The following substances were taken internally: melon seeds, slippery elm, black cherry water, extract of lily-of-the-valley, peony, lavender, pears dissolved in vinegar, gentian root, nutmeg and finally, forty drops of an extract of the human skull. As a last resort, the bezoar stone was employed but the king died anyway.

In 1649, during the worst of the famine, the Abbess of Port Royale writes as follows:

> This poor country is a horrible sight; it is stripped of everything. The soldiers take possession of the farms and have the corn threshed, but will not give a single grain to the owners, who beg for it as an alms. It is impossible to plow, there are no more horses—all have been carried off. The peasants are reduced to sleeping in the woods and are thankful to have them as a refuge

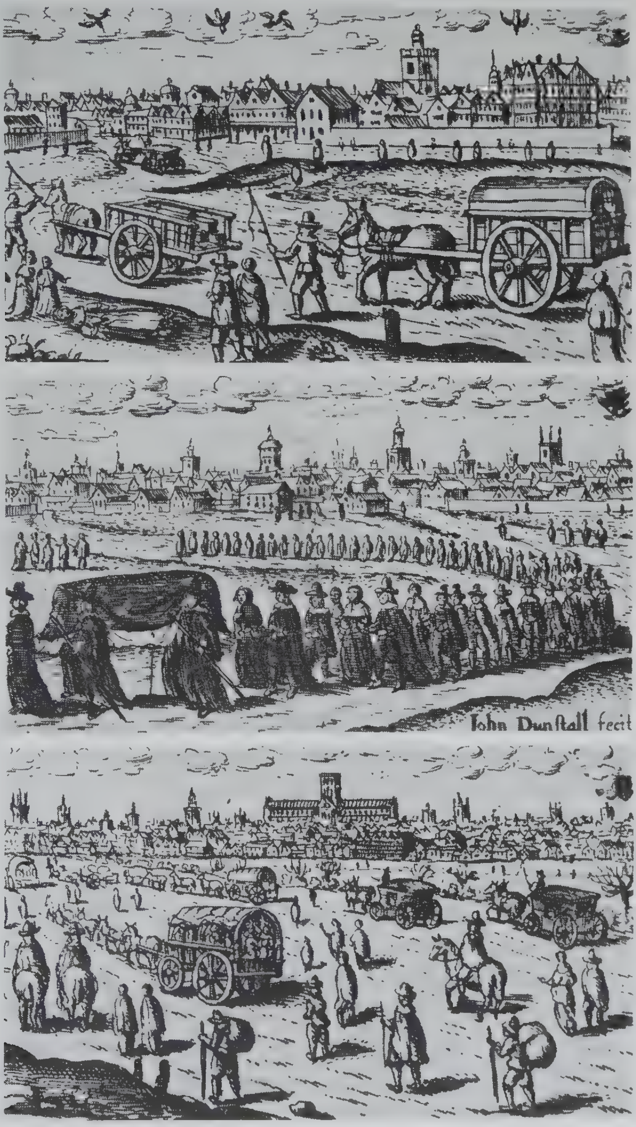

Figure 141. Plague scenes. *Top*, bearers carrying bodies of plague victims in a covered cart to the large plague pit where they will be buried. The uncoffined corpses were wrapped in shrouds and tied hand and foot. *Center*, the funeral cortege of a distinguished victim of the plague. *Below*, London after the plague has abated. Caraman, Philip: *Henry Morse, Priest of the Plague*. Farrar, Straus & Cudahy, 1957.)

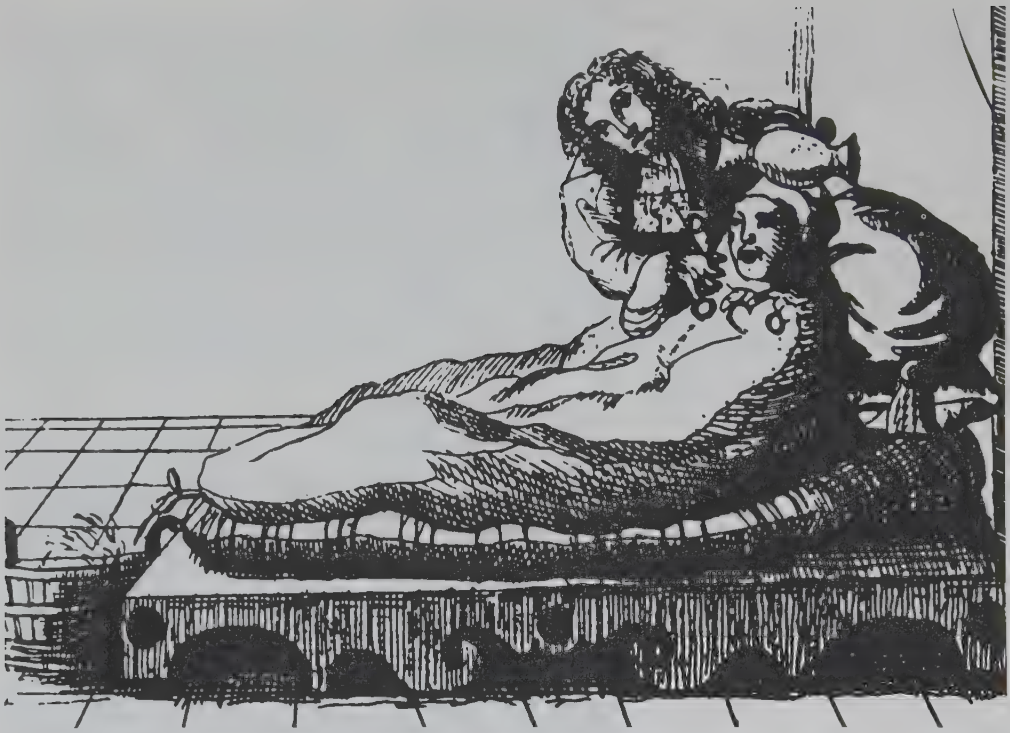

Figure 142. A method of reducing the body temperature of a patient with a fever. Patient is placed in a leather sack and cold water is poured into a funnel. The water runs over the body and is collected in a wooden tub at the foot of the couch (seventeenth century).

> from murderers. And if they only had enough bread to half satisfy their hunger, they would indeed count themselves happy.[6]

Three years later she again writes:

> All the armies are equally undisciplined and vie with one another in lawlessness. The authorities in Paris are trying to send back the peasants to gather in the corn;[7] but as soon as it is reaped the marauders come to slay and steal and disperse all in a general rout.

Of course the class which suffered most under this general misery was the poor, both the peasant in the country and the artisan in the city. The famine bread which they ate was made of barley and oats mixed with straw. The Jesuit Relations of 1651 say that in one parish the poor subsisted on "straw mixed with earth" and that their staple dish was "mice which the inhabitants hunt, so desperate are they from hunger."

There was a need for a social reform; a solution was forthcoming which revolutionized the care of the sick.

St. Francis de Sales envisioned a group of women forming a voluntary association for friendly visiting of the poor and nursing the sick. This organization that materialized might be considered one of the early visiting nurse associations. St. Francis de Sales first encouraged and motivated influential ladies to give money and time to an organized service for the sick poor. They were to visit the sick daily, bathe, dress and care for them, and take home their linen to be washed. It was his desire that this order of women should be without external vows, and they were free to visit the sick in their homes and minister to their needs.

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[6] Hugon, p. 172.

[7] The refugees had flocked to Paris and in 1652 there were 100,000 beggars in the capital.

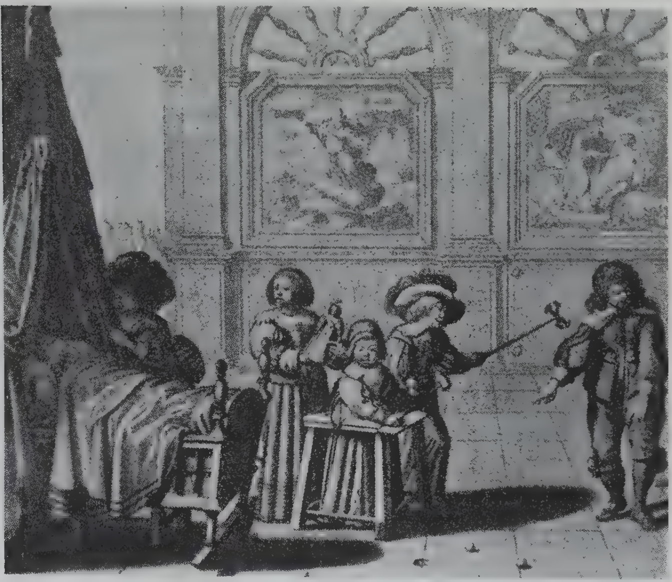

Figure 143. Seventeenth-century nursery from engraving by A. Bosse (1602–1676). Children learned to walk by means of a walking-frame. (Ciba Symposia, August, 1940.)

The order was called the *Order of the Visitation of Mary*. The cofoundress and director of this order was a woman, Madame de Chantal, who was experienced in visiting nursing. She was wed to Baron de Chantal, who, after eight years of happy married life, was shot while hunting.

Madame de Chantal and the members of her group visited the sick in their homes, cleaned and dressed their wounds, made their beds, gave them clothes, took home their linen, boiled it to remove impurities, mended and returned it to the patient. She assisted them when they were dying and when they were dead, she washed them and laid them out.

It was *St. Vincent de Paul* (1576–1669) who introduced modern principles of visiting nursing and social service because his conception of charity was a new one for that period. He believed that not only rich and influential persons, but the poor and humble could contribute to the relief of distress by brotherly sympathy and personal service. He taught that indiscriminate giving was harmful and that one must investigate the condition of the poor, must find out their needs, must ascertain the causes of the poverty and wherever possible remedy them, and must get the unemployed work, and put them in such a position that they might be able to help themselves. This was an advanced step and extremely modern thinking. He realized the right of the poor to their family life, and the benefit to be derived from a recognition of the family unit. He urged that the family be kept together, even if rent had to be paid for a period of time. This, too, was certainly a modern idea.

St. Vincent longed to help and comfort his brothers, but he realized the ineffectiveness of his personal service as one field worker. He felt that if he established large groups of men and women which would spread out into organized units, they could multiply and encircle the globe.

St. Vincent de Paul founded various charity organizations and directed them as well. He fired others with his enthusiasm.

In 1617, he formed the Society of Missioners, priests trained for special work among the poor; they renewed vows annually.

It was also in 1617 that he first conceived the idea of the Dames de Charité. When he heard of a family's needing assistance, he asked his congregation and got such response that he realized that improperly guided charity could do more harm than good. He suggested to a few ladies the same general plan organized by St. Francis de Sales; these women were called Dames de Charité, their work was mainly visiting nursing. The ladies went from cottage to cottage visiting patients, making sick patients' beds, giving food and preparing medicine, and consoling the dying and distressed. This new organization spread throughout France.

Medical as well as nursing care was becoming available for the poor. Doctors gave their services freely and their lives as well in times of epidemics; they were not prepared to protect themselves and others from infections.

Medical charities were directed by Theophrastus Renardot, who had established an association for the purpose in 1612. By 1640, the King recognized the value of his work and gave him free reign to assist the poor.

Soon, several doctors joined him and set aside two days a week to visit sick poor and prescribe remedies. Now there were doctors diagnosing cases, ladies giving bedside care, and charity associations available to investigate conditions and give material relief.

These groups continued for ten years, but St. Vincent felt the need for a person who could teach, direct, and coordinate the work of the Dames de Charité. Madame Le Gras became the First Supervisor of these visiting nurses, Louise Le Gras (later known as *St. Louise de Marillac*) was a woman of noble birth who was a widow when St. Vincent presented his plan to her which she accepted.

She would receive directions and counsel from St. Vincent. Then, when she arrived in a village, she would give the Dames de Charité instructions. She accompanied them on their rounds, helping, advising them, assisting them in their duties, and making suggestions about other ways of giving care to their patients. Gradually the enthusiasm of these ladies lessened, for their husbands objected to their absence from home for such lengthy periods.

Figure 144. St. Vincent de Paul presenting abandoned children to St. Louise de Marillac.

In 1633, the *Sisters of Charity* were founded and became a secular nursing order of superior character. Young, single, peasant girls who were strong and interested in this program were recruited. They were required to be intelligent, refined young women who were interested sincerely in the sick poor. They were called Les Filles de Charité or the Sisters of Charity. A systematic educational program, which consisted of experience in the hospital, visiting in homes, and in caring for the sick, was established. The program was a combination of social service to the poor and nursing of the sick. Overwork was forbidden by St. Vincent.

St. Louise de Marillac was prepared for

this task. She had an excellent educational background which was rare for a woman in this time.

Applications came from great distances and St. Louise selected her enrolling class with care, as noted by the following letter:

> I have no wish to receive any persons except such as are suitable to our life, as regards both health of body and sanity of mind. You know how important this is to a community. I must, therefore, beg you to ascertain whether their desire to come here is prompted by a wish to see Paris, or a desire to make a living for themselves. . . . We do not want those who have no desire to work at their spiritual perfection in the service of God. They should have no motive in coming except the one of serving God and their neighbor.

St. Louise wrote this letter towards the end of 1639, and it might have been written today. Good health, a sound mind, respectable background, a desire to serve God in the field of teaching, nursing or of social service and labor unceasingly at her own perfection, are the only dowry required today of a girl who wishes to become a Daughter of Charity.[8]

Thus arose the second religious order to be founded by St. Vincent de Paul. St. Vincent taught the Sisters of Charity to find the presence of God in the service of the afflicted. They were to have no grille, no veil, no cell, no cloister. He said "the streets of the city or the houses of the sick shall be your cells, your chapel the parish church, obedience your solitude, the fear of God your grating, a strict and holy modesty your only veil."

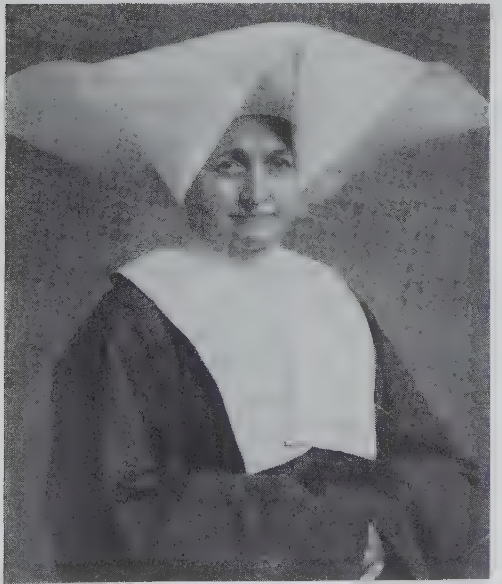

Figure 145. A Sister of Charity of St. Vincent de Paul.

The costume of the Sisters of Charity has been the gray-blue gown and apron of rough woolen cloth worn by the French peasant of the period, with a stiff white collar and a headdress called a cornette.

Into this dark period of nursing came these young, enthusiastic, well prepared nurses called Sisters of Charity. Their zeal became infectious, many recruits joined them and this flourishing order has encircled the globe. They have performed every work of charity: nursing in hospitals and homes; teaching in schools; taking charge of orphanages; giving heroic service during such wars as the Napoleonic Wars, the Crimean War and the Civil War in the United States and, since its inception, they have given courageous care to the patients in the National Leprosarium in Carville, Louisiana.

In 1640 St. Vincent de Paul established also a Foundling Hospital to which he carried little children who had been abandoned.

The idea of human brotherhood, of love of one's neighbor, of responsibility for the bodily and material needs of one's fellow creature, originating in Christian love, was being revived.

St. John of God was born in Portugal in 1495. For some mysterious reason, he disappeared from his home when he was eight years of age and grew up in Spain spending the greater part of his first twenty-two years as a shepherd. The next eighteen years were filled with the duties of a soldier which hardened him in both

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[8] *Then—and Now with the Daughters of Charity.* Normandy, Mo., Marillac Seminary, 1946, p. 20.

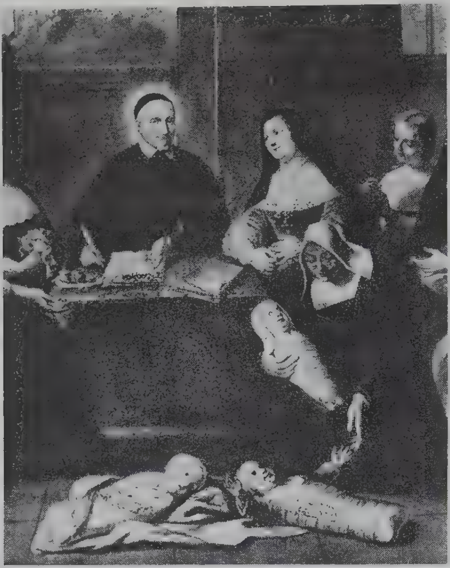

Figure 146. Two small tightly wrapped children, and a somewhat older child whose arms are free, being shown to St. Vincent de Paul (1576–1660). Painting from the old Paris Foundling Asylum. Eighteenth century. Musée de l'Assistance Publique, Paris. (Ciba Symposia, August 1940.)

body and soul. (The life of a soldier of this period involved revelry, drunkenness, cruelty to the poor and suffering, looting expeditions, and the gathering of booty.[9])

At the age of forty, he left the army and entered the employ of a gentleman farmer who assigned him the task of caring for the man's horses. The best of care was lavished upon these animals, in sharp contrast to the desperate plight of the starving human beings who had to beg for a meager subsistence. Returning to Spain, he became a shepherd and reflected on the wasted life he had lived. He made a pilgrimage of repentance.

On his journey to Granada, he encountered a child weary from walking. St. John carried this little one on his shoulder until the end of the journey. When John placed him on the ground, the child said, "John of God, Granada shall be your cross."

He heard a sermon once which stressed the glory of being made a fool for the sake of Christ. John's most unusual reaction to this sermon resulted in his being hustled off to what was then referred to as a lunatic asylum. The picture of the care of the mentally ill of that period was gruesome. The typical treatment was the whip. St. John was stretched out on the floor, hands and feet tied, and flogged with a double knotted cord. At the termination of this procedure, he was locked in solitary confinement.

When he was released, St. John returned to Granada, gathered all the homeless vagrants and crippled persons into a house which he rented and gave them special care. It was the custom to display one's infirmity in order to beg for charity. When he found those who were too deformed to crawl to his abode, he carried them on his back. St. John of God begged for alms in order to feed and purchase medicines for these derelicts. Thus was laid the foundation for the famous Hospital of St. John of God at Granada.

The Bishop sent for him, insisted that he be known by the name John of God, wear a religious habit, and promised that funds and volunteers would be forthcoming for a better hospital. Benefactors became generous and many begged to assist him in his ministrations. In this new institution, money was allocated from the city treasury to pay for supplies and medical service for the patients. Each patient had a private bed, which was unique in this era when beds contained three, four, or more

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[9] Paralleling the story of St. John of God is *Simplicus Simplicissimus* (1669) by Hans Jakob von Grimmelshausen, one of the most valuable and informative works of the seventeenth century. It was a novel depicting the background of the destruction and chaos of the Thirty Years' War, portraying the depravity and abasement of the period. As a child, Simplicissimus was carried off by pillaging soldiers. His life was a painful series of adventures as a hunter, a soldier for many causes, and a robber. Eventually he retired to live as a hermit and practiced a life of prayer, mortification, and contemplation.

Figure 147. St. John of God. (Murillo, 1618–1682, Hospital de la Santa Caridad, Seville.)

patients. Patients with contagious diseases were isolated, and an out-patient department was instituted.

St. John had a special interest in abandoned children, admitting them to the hospital until foster or adoptive parents could be found. All patients received superior care, but the ones who were mentally ill were lavished with tender love and understanding. There was an acute need for a kinder and more enlightened type of care of the mentally ill and mentally retarded. The abuse and cruelty meted out to these poor victims has been an appalling fact.

The *Brothers Hospitallers of St. John of God,* the order he founded, grew and thrived. They adopted the Rule of St. Augustine. They opened hospitals at Madrid, Cordova, Toledo, and less than fifty years after the death of their founder, the order spread to every Christian kingdom in Europe and other continents. Wherever explorer ships happened to go, the Brothers of St. John of God followed to open hospitals for the natives and bring consolation for body as well as soul.

An ambulance unit staffed by the brothers accompanied the forces of King Philip II and Don Juan in their fight against the Moors. In their daily activities, they sometimes ministered to the needs of those who were fighting while at other times they faced severe opposition from the Indian witch doctors of the New World. The brothers came to Central and South America as early as 1602.

In many provinces of the Order of Hospitallers of St. John, the brothers are physicians, surgeons, dentists, pharmacists, although the greater number are registered nurses. They have been the personal infirmarians to the Popes as well as directors of the Vatican Pharmacy. Nursing homes for the aged and also for patients with long-term illnesses have been under the aegis of this order. They have maintained residences for homeless men, utilizing opportunities to assist in rehabilitation and

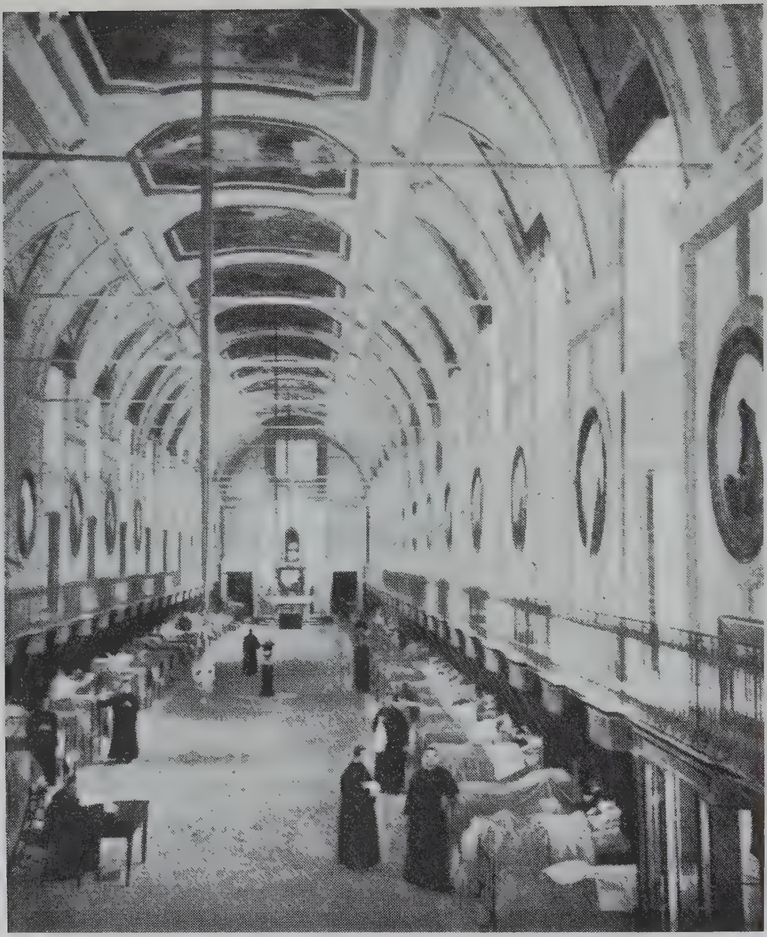

Figure 148. First hospital in Italy, "La Pace" at Naples, operated by the Hospitaller Brothers of St. John of God. Note the magnificent paintings on ceilings and walls. (McMahon, Norbert, O.S.J.D.: *The Story of the Hospitallers of St. John of God.* Newman Press.)

eventual return to society. Indo-China, a fruitful mission field supported by the Canadian Province, has had leper colonies staffed by these brothers. This order of brothers has a long record of devoted service to the needy.

A most enlightening picture of a hospital and the care of the patients in Goa under Portuguese influence in the seventeenth century has been preserved and presented in Blunt's[10] portrayal of the translations of the "Viaggi," the travels of Pietro Della Valle. (The Portuguese colony of Goa was founded by Alfonso de Albuquerque in 1510. It was a city of wealth in the late sixteenth century. The most famous cathedral has been the Church of Bom Jesus which contains the tomb of St. Francis Xavier.)

> Perhaps the most remarkable institution in Goa was the Royal Hospital for men, founded by Albuquerque and subsequently in the charge of the Jesuits, which in many respects seems to have been at least three hundred years ahead of its time. Pyrard, an impartial and accurate observer, spent several weeks as a patient there in 1608. The building, which was surrounded by spacious gardens where convalescents could wander at

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[10] Blunt, Wilfred: *Pietro's Pilgrimage.* A journey to India and back at the beginning of the seventeenth century. London, James Barrie, 1953, pp. 255–257.

will, seemed to him more like a palace than a hospital. Everything in the wards was spotlessly clean. The elegant beds were of red lacquer, chequered or gilded, with fine white cotton sheets and silk coverlets that were changed twice a week. Each new patient on his arrival had his head shaved by a barber, and after being thoroughly scrubbed was issued with pajamas, cap and slippers. He was further provided with a fan, a bottle of drinking-water, a little table and a chamber-pot. Lanterns glazed with oystershell glowed gently throughout the night. The food was excellent, patients on full diet receiving for supper a whole fowl each, served on a plate of Chinese porcelain, and being encouraged to ask for a second helping. But wine was only allowed when specially prescribed.

The higher officials of the hospital were all Portuguese, the servants native Christians. The doctors, who visited their fifteen hundred patients morning and evening, were accompanied on their rounds by servants bearing baskets of lint and other medicaments or diffusing incense, and by an apothecary and kitchen clerk, notebooks in hand, who jotted down prescriptions and special diet. Male visitors were allowed from 8 to 11 and from 3 to 6 o'clock and might eat with their friends who could apply for extra rations; they were searched at the gate for arms, and to see that they were not bringing unsuitable food or drink to the sick.

There were two fine churches attached to the establishment—decorated, like the corridors of the hospital itself, with religious frescoes—in which Mass was celebrated daily, and Jesuit priests visited the wards to hear confessions and administer the Sacrament to those who were too ill to leave their beds.

The principal diseases seem to have been enteric fevers, dysentery, cholera, scurvy and syphilis. Patients were carefully isolated; yet in spite of every precaution and every attention, mortality was very high. This was largely due to a general ignorance of the correct treatment of tropical diseases; to the unhealthy climate; and to the fact that the chief physician was always the Viceroy's private doctor, who, like his master, had also to return to Europe after three years' service, just as he was beginning to acquire some knowledge of local conditions.

St. Camillus De Lellis (1550–1614) was born in Naples of a noble family. His father was a soldier adventurer and the son joined him in this occupation. Very early, he acquired an interest in gambling and developed an astonishing skill at this pastime. It has been said of him that before he was nineteen he had learned everything a wicked youth could learn and made free use of his knowledge.

During the course of one fighting episode, both he and his father fell ill of a disease from which his father did not recover. This made a profound impression on the son.

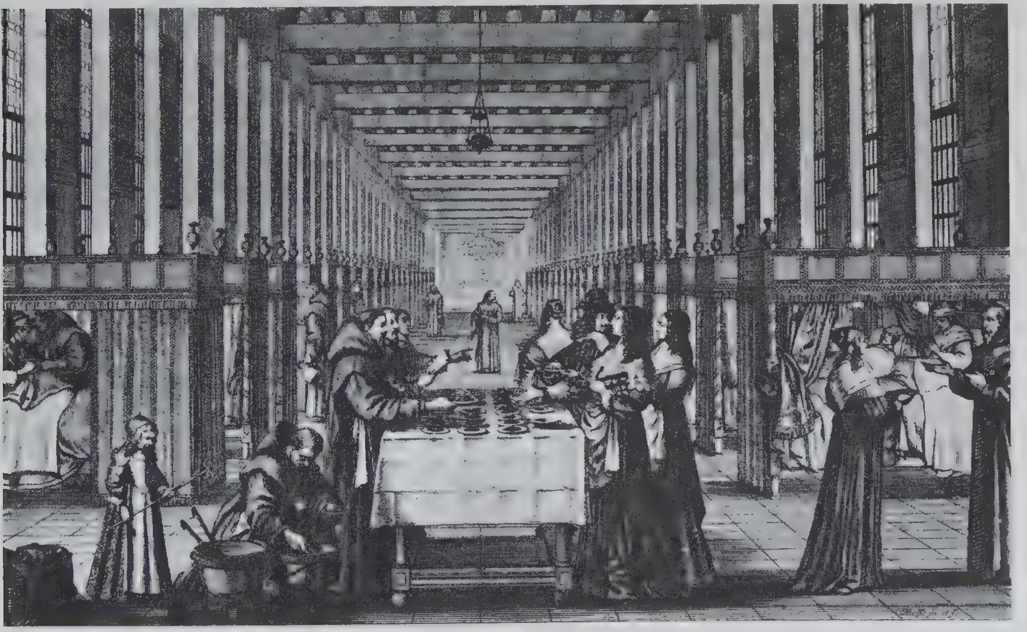

Figure 149. The Queen of France and ladies of the court serving the sick at the Brothers' Hospital in Paris. (McMahon, Norbert, O.S.J.D.: *The Story of the Hospitallers of St. John of God.* Newman Press.)

Above his ankle, Camillus had a wound which drained constantly and he applied for admission at the hospital of San Giacomo. Because he had no financial resources, he requested the opportunity to be a servant in return for the care to his infected leg. Progress was noted until leisure time prompted him to resort to his old interest in gambling. This terminated his affiliation with this hospital and the medical care he was receiving.

One day, while he was begging, a rich man offered him the chance to become a laborer on a construction project building a monastery. His companions taunted him for accepting such work, so he refused the offer and followed his companions. As he walked with them, he realized that he had rejected what might have been a special opportunity for a change in his way of life. He turned, retraced his steps, and joined the group of laborers at the monastery.

The hard work may have caused the infection in his leg to flare up. He returned to Rome to the San Giacomo hospital and again asked for work in return for treatment for his leg. For four years he remained there, finally receiving an appointment as superintendent of the servants which, in that period, included nurses—all male. He labored tirelessly and began to love as he served the sick. He realized that good nursing was dependent on love; also, that the duties of a priest were carried out best where love was present. He determined to encourage others, both nurses and priests, to join him. In order to equip himself for this task, St. Camillus studied for the priesthood and was ordained.

He selected a house in the slum area where pestilence was most abundant and gave his service to the sick poor. At first his efforts were directed towards preparing and providing hospital nurses, but he learned that the sick poor outside of the hospital and in the slum areas were desperately in need of care. He achieved remarkable success in tending the dying and from this service his wonderful order, the *Nursing Order of Ministers of the Sick,* evolved. The members of this order wear a red cross on their cassock.

A hospital for alcoholics was opened in Germany by St. Camillus. His love for patients drew him to the prisons where he gave special care to those condemned to die.

Even animals were the recipients of his love. There is a story that has been told of a dog with a broken leg to whom he gave care and encouraged others to do in a similar manner as he said: "I, too, have had a bad leg and I know the misery of not being able to walk. This is a creature of God, and a faithful creature, too. If I am as faithful to my master as a dog is to his, I shall do very well."

The order, popularly called the Camillian Fathers and Brothers, gave service as army nurses during several wars. Its members served during World War I. Some worked in the hospital trains set up by the Knights of Malta.

St. Charles of Borromeo (1538–1584) was a wealthy, well educated young man who became Archbishop of Milan. When his family died Charles distributed his wealth to the poor. His free time was spent bringing food and clothing to the poor and visiting the sick. During the plague which devastated Milan in 1575, he nursed the sick and ministered to the dying.

Jeanne Biscot (1601–1664), the daughter of a respected citizen of Arras, performed outstandingly good nursing work in war, famine, emergencies, and pestilences. In 1640, when her home town was attacked, many sick and wounded needed medical attention, preferably in a hospital. Jeanne set an example which others followed of dressing wounds, feeding, reviving the sick and needy, and assisting the dying. These energetic young ladies requested the right to use a building for a hospital and ob-

Figure 150. Jeanne Biscot. (*They Caught the Torch.* Will Ross, Inc.)

tained it. They cared for patients as long as care was needed.

One of Jeanne's special talents lay in her ability to detect and develop the special abilities of her patients. Her hospitals became workshops where community residents of all ages learned to enrich personal skills. To her is given the credit of building a program of occupational therapy.

LIFE IN THE NEW WORLD

The new routes of trade and travel of the period beckoned the Spanish and Portuguese colonists who settled in Mexico and Peru. They brought with them many members of religious orders who were to become the teachers, doctors and nurses in the colonies, and they taught the Spanish language and Christian faith to the Aztec and Inca Indians.

In addition to knowledge being brought to the New World, information was brought back to the Old World. For example, on Columbus's second expedition, a Dr. Chanca, who was royal physician to King Ferdinand and Queen Isabella, was appointed doctor to the 1500 members of the group. He was a well educated gentleman who had been professor of medicine at Salamanca University. During his sojourn in the Americas, he studied the native medicines and many of these remedies such as balsam of Peru, balsam of Tolu, cascara sagrada, and quinine, were introduced into Europe through his endeavors.

In 1521, *Mexico City,* the capital of the Aztec civilization, was conquered by Cortés. By 1524, the Hospital of the Immaculate Conception, the *first hospital* on the American continent, was built in Mexico by Cortés. In 1528 Bishop Zumarraga founded the continent's first library with 200 volumes, and by 1534 the first printing press was built. In 1531 another hospital, the Hospital of Sante Fe (Holy Faith), was built in New Mexico. Mission colleges were founded in 1531 at Queretaro and in 1546 at Zacatecas; in 1536 the College of Santa Cruz was established. The Universities of Mexico and Lima, founded in 1551, possessed departments in theology, scripture, canon law, civil law, arts, rhetoric, grammar and medicine. The *first medical school* on the American continent was established at the *University of Mexico* in 1578 while the second medical school was affiliated with the University of Lima, in Peru, before 1600.

From the time Jacques Cartier sailed up the Saint Lawrence River in 1535, tales of the fascination of *New France* lured the adventurous. In 1605, the first settlement, the Habitation, was colonized at Port Royal in Nova Scotia. The famous explorer, Samuel de Champlain, and the apothecary, Louis Hebert, were two of the members of this pioneer group. Indeed, the first nurse in the French colonies was *Marie Hebert Hubou,* widow of the surgeon-apothecary, Louis Hebert. Marie took care of the sick patients who were recommended to her by Jesuit Fathers.

The reports of life in New France published in the Jesuit bulletin prompted religious nursing sisters to answer the call for help. On August 1, 1639, three sisters of the Order of St. Augustine (Augustinian Sisters) arrived in Quebec and staffed the *Hôtel Dieu* in *Quebec,* built by the Duchess of Aiguillon who was a niece of Cardinal Richelieu. These Augustinian sisters belonged to a cloistered order, and they had been prepared to care for the sick. Their habit consisted of a white woolen dress with a black leather belt and black veil. These sisters gave heroic service during the bleak, cold winters, during the Indian wars and during the epidemics of smallpox and typhus.

Ursuline sisters who were teaching at the mission school were given emergency classes in the care of the sick during the epidemics. Thus instruction in the care of the sick had commenced in the New World.

Jeanne Mance (1606–1673) was born the daughter of well-to-do French parents and was educated at an Ursuline convent. While at the convent school, the stories of heroism from the New World reached France and inspired Jeanne, when her age permitted, to join the courageous band. In 1638, during a severe epidemic, an organization of Ladies of Charity (probably those of St. Vincent de Paul) was formed

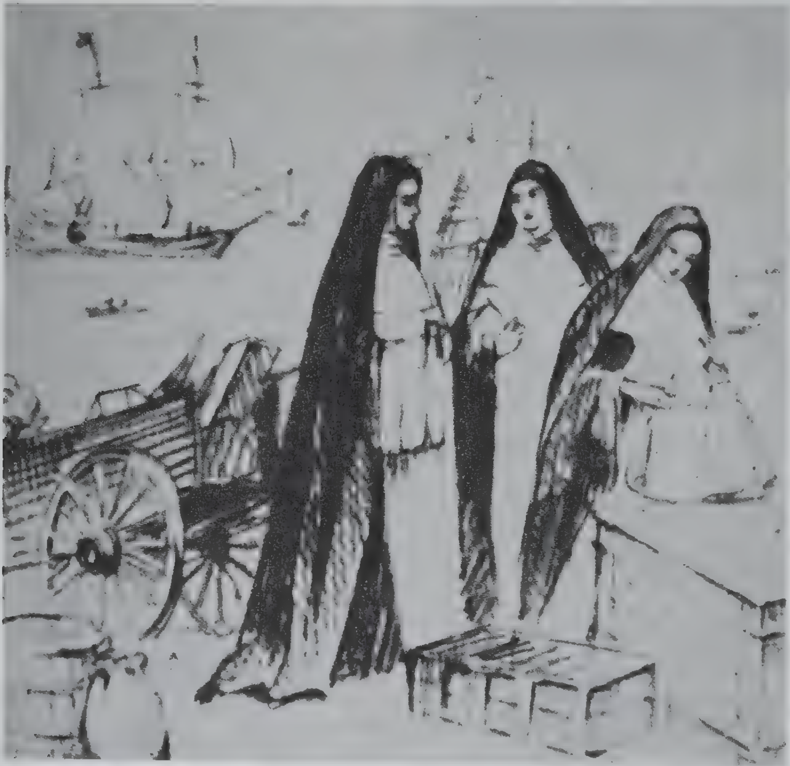

Figure 151. Arrival of the first three Augustinian Sisters at Quebec, 1639. (Courtesy of the Hôtel Dieu. Quebec.)

Figure 152. Jeanne Mance ministering to a little Indian girl while the mother watches. (*They Caught the Torch*, Will Ross, Inc.)

to care for the sick. Jeanne joined this group and in this way received instruction in nursing care.

On May 17, 1641, Jeanne Mance arrived in Montreal, sponsored financially by the wealthy and philanthropic Madame de Bullion, who asked her to erect a hospital. Jeanne Mance cared for the Iroquois Indians as well as the colonists, and the Hôtel Dieu in Montreal, founded in 1644, stands as a testimonial to her.

In 1657, Jeanne Mance returned to France to recruit personnel. The Hospitallers or *Nursing Sisters of St. Joseph de La Flèche* came over to staff the Hôtel Dieu in Montreal with Jeanne Mance as administrator. From France they sailed on the Saint André, a hospital ship which had terminated its role without benefit of fumigation or quarantine. There was an outbreak of pestilence which spread throughout the ship. Jeanne Mance and three of the sisters were infected with the disease but survived.

Every year on May 17, the sisters and student nurses celebrate the arrival of Jeanne Mance in Montreal.

Medicine and care of the sick in colonial America is a fascinating chapter in the history of the English colonists. The settlers were poor and life was difficult in the new land, but the lack of medically prepared persons was a serious problem. Outbreaks of smallpox, scurvy and yellow fever wiped out many of the colonists.

Sir Walter Raleigh sent an expedition to Roanoke Island off the coast of North Carolina. The colony obtained no supplies during the period of warfare with the Spanish Armada (1588). In 1591, relief ships were sent out only to find that the settlers had disappeared completely. Could the mysterious disappearance be due to starvation or an epidemic? No one knows the answer to this riddle.

The settlers in the Jamestown colony faced a rugged type of existence. During the first three years, all but sixty of the five hundred colonists had died from malnutrition or one of the dietary deficiency diseases such as beriberi or scurvy.

In 1620, a type of hospital was constructed which could accommodate fifty persons if at least two patients shared one bed.

The men who practiced medicine in Virginia had great faith in the humoral theory. Medical treatments included withdrawing excessive amounts of humors from the body by using emetics, by purges, and by bloodletting.

It is recalled that the English migrated to America primarily because of three factors: politics, religion, and economics.

The Pilgrim Separatists had withdrawn from the Church of England and set up their own church organization, while the Puritans remained in the Church of England, but sought to purify it according to their own beliefs. Because of religious conflict, many individuals wanted to settle in a new land. The economic aspect resulted because many people had a difficult time making a living. This caused widespread unemployment.

The Pilgrims sought refuge in Holland after fleeing from England. For fourteen years, they worked hard, saved money, and bought as many shares as they could in the Plymouth Company which they formed. In this way, they pooled their financial resources, while the additional needed funds were obtained from London businessmen. The Pilgrims landed on Cape Cod Bay in Plymouth in 1620. During the first winter, half of the colony died.

Before landing, the Pilgrims wrote the Mayflower Compact. In this document, they pledged their loyalty to glorifying God, advancing the Christian faith, honoring the king, and obeying laws for the good of the colony.

In the colony at Plymouth, Samuel Fuller, a deacon of the church, acted as physician, using prayer as part of routine treatment. His wife was the first midwife of the colony; Anne Hutchinson and Ann Eliot, wives of prominent men, also practiced midwifery.[11] Witchcraft was seriously considered a cause of disease or injury. Here and elsewhere it was commonly felt that sickness was punishment for sin. Early colonial records speak of certain persons, both men and women, who were chosen on account of their skill and fitness to care for the sick.

An account of the first winter, when many died, was as follows:

> Persons who, to their great comendations be it spoken, with abundance of toyle and hazard to their own health, fetched them woode, made them fires, drest them meat, made their beads, washed their loathsome cloaths, cloathed and uncloathed them; in a word, did all ye homely and necessaire offices for them wich dainty and quesie stomacks cannot endure to hear named; and all this willingly and cheerfully. . . . One invoked the word of God, let blood, or prescribed drugs to the best of one's understanding.

In 1630, the Puritans founded the Massachusetts Bay Company. The influence of the Puritan clergymen was great. In the New England settlements, the clergymen were often the physicians. They were called "preacher doctors."

In the absence of medical schools, the clergy had the best educational preparation to practice medicine. Some laymen performed this task without benefit of education or license. The Rhode Island General Assembly is purported to have granted a degree and a license to practice medicine to a Captain John Cranston for his skill and ability in medical care. It seems an unusual procedure to receive a degree from a group of men not associated in any way with an institution of higher learning; and to receive a license to practice a professional skill without benefit of an examination.

Other New England colonies were founded, such as those by Roger Williams in Rhode Island and the Reverend Thomas Hooker and his followers who emigrated to Hartford, Connecticut. In 1639, representatives from the first three towns in Connecticut drew up the first written constitution for the government of a commonwealth in America called the *Fundamental Orders*.

The first governor of the Massachusetts Bay Colony, *John Winthrop* (1587–1649), and his son, John (1616–1676), who became governor of Connecticut, were enlisted as doctors. Their preparation was received largely through correspondence with friends in England and, in like manner, their care of the sick was carried on by letters to patients since they could not visit all of them. These men were two of

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[11] *Men* midwives were fined!

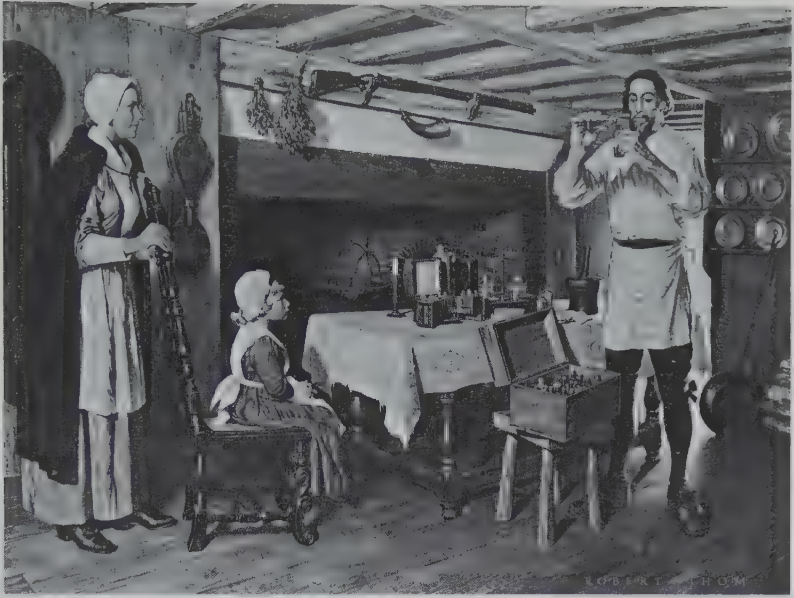


Figure 153. Governor who healed the sick. © 1953 by Parke, Davis & Co.

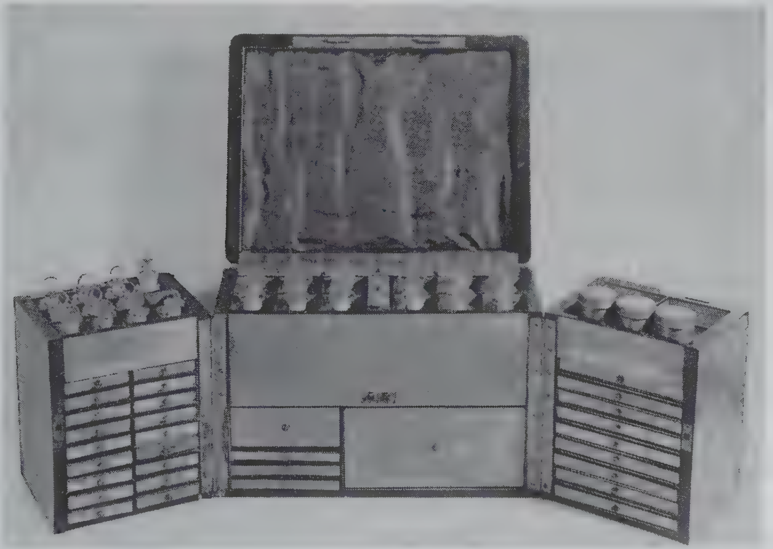
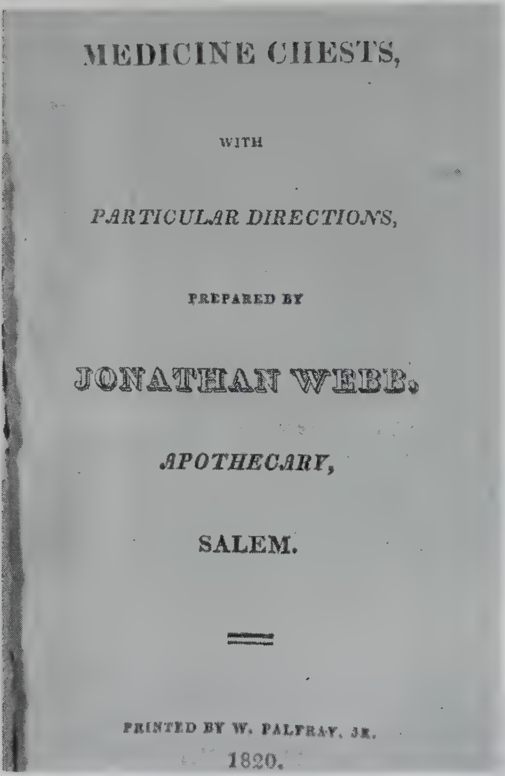


Figure 154. A medicine chest of the type used by the early colonists and on board ship. Each drawer and section is numbered and described in the accompanying leaflet. (Courtesy Peabody Museum of Salem, Mass.)

the many who assumed the duties of apothecary and doctor. Usually they had a chest of medicines and a guide book of suggested remedies for different ailments.

A minister, Reverend Thomas Thacher, "though no Physitian, yet a well-wisher of the sick," felt compelled to write a leaflet for the community to be used during the many and troublesome epidemics of smallpox. The title of this discourse, published in Boston in 1677, was: "A Brief Rule to Guide the Common People of New Eng-



MEDICINE CHESTS,

WITH

PARTICULAR DIRECTIONS,

PREPARED BY

JONATHAN WEBB,

APOTHECARY,

SALEM.

PRINTED BY W. PALFRAY, JR.
1820.

Figure 155. The leaflet found in the medicine chest in Figure 154. This contains directions for compounding medicines from the ingredients in the medicine chest. (Courtesy Peabody Museum of Salem, Mass.)

land how to order themselves and theirs in the Small Pocks, or Measles."

Institutions of higher education were needed in these colonies. In 1636 Harvard College was founded, and in 1693 the College of William and Mary in Williamsburg, Virginia was established. The legislature of the Massachusetts Bay Colony was responsible for the inception of Harvard College because the colony was desirous of perpetuating learning and wanted to prepare an educated ministry. For the first fifty years the President of the College did all the teaching; students interested in receiving a medical education went to England or France to receive it.

In 1623 a colony from *Holland* settled in New Netherlands (New York). The *first hospital* in this area was built by the Dutch on Manhattan Island in 1658 with the financial assistance of the West India Company. This was the beginning of New York's Bellevue Hospital which cared for the sick, the poor, and the mentally ill.

Toward the close of the seventeenth century, the *witchcraft* persecutions (from January 1692 until May 1693) provided an additional emotional trauma for the colonists. Salem, Massachusetts, was the center of the panic, and during this period hundreds of people were accused. If they confessed their guilt, they were released; if they protested their innocence they were imprisoned in the Old Witch Jail and Dungeon and hanged. The fracas started in the home of a Salem minister who had purchased two slaves, a husband and wife, from the West Indies. The wife, Tituba, had the ability to hypnotize and practice

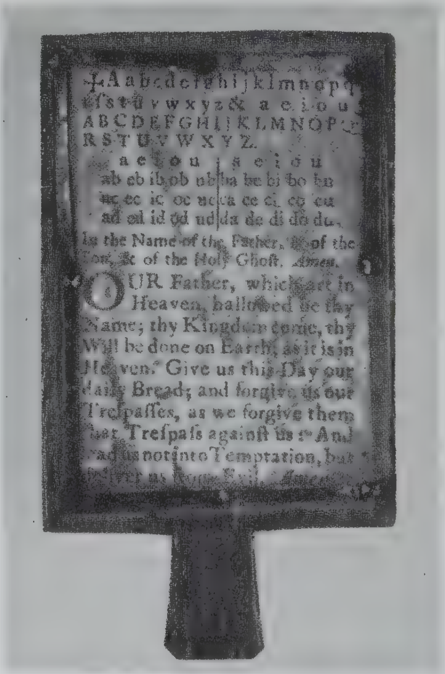


Figure 156. A hornbook found in Guilford, Connecticut. Hornbooks originated in Europe, designed after the wax tablet of the Egyptians, Greeks and Romans. The tablet developed into an alphabetical table on wood, later on horn. (Courtesy of The Connecticut Historical Society.)

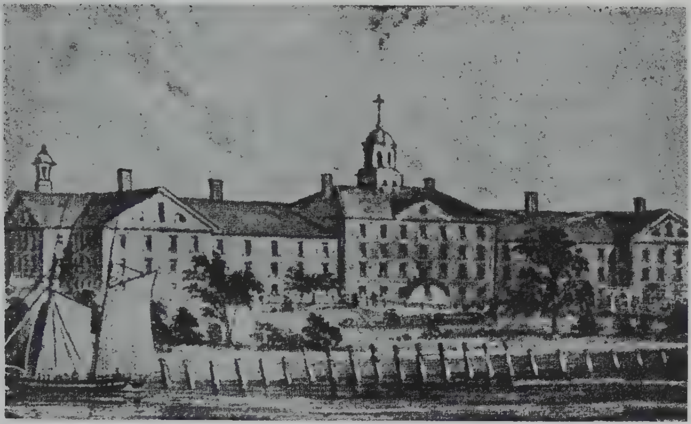


Figure 157. Bellevue Hospital in 1848. (Courtesy of The Modern Hospital Publishing Co.)

the magic of her native land. She hypnotized several children who accused community residents of being witches. These persons had to submit to a physical examination (not by medically trained persons), and if their bodies contained such blemishes as birth marks or even warts, these were considered witch marks and the person was declared a witch. Fortunately this horrible situation was stopped when the wife of the Governor was accused.

In summary, a renaissance had taken place in the areas of pharmacy, medicine, biological science and even in nursing. Travel had expanded; migration of individuals from Europe and Africa to the Western Hemisphere had taken place; the world economy had expanded because of the influx of wealth mostly from Mexico and South America; the result was the development of new markets, new industries, new foods, new habits, and new diseases; the spread of these diseases followed the route from the Eastern to the Western Hemisphere.

Aids to Enrich an Understanding of This Period

I. Prepare a biographical booklet of Renaissance scientists drawing upon your knowledge of chemistry, bacteriology, anatomy, history, literature and art appreciation.
II. Compile a series of masterpieces by artists of the Renaissance entitled "Medicine in Art." Include prints and stories concerning the pictures.
III. Draw a cartoon presenting the transition from the medieval world to the era of the Renaissance. The caption might read "Bridging Two Worlds."
IV. Construct a diorama on "Life in the Colonies," including the care of the sick. Visits to historic shrines might prove helpful.
V. Write an article for a science periodical on the beginnings of chemistry, bacteriology and/or anatomy. Compare the first laboratories, equipment and techniques with our modern ones.

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VIII

The Eighteenth Century

The accomplishments of the eighteenth century must be viewed against a background of various outbreaks of political strife, several of which ended in armed intervention and revolution in an endeavor to create a more democratic form of government. Three of the revolutions, an intellectual one, the American Revolution, and the French Revolution, sought to spread a doctrine of independence and emphasize the rights of man. All men were born free and equal and were to be entitled to life, liberty, and the pursuit of happiness. The thirteen colonies became the United States of America, "a new nation conceived in liberty and dedicated to the proposition that all men are created equal."

There was need for legislation for improving the sanitary and living conditions for the poor. There had been no attempt at the prevention of disease or at teaching the poor the principles of hygiene and sanitation. Epidemics took a fantastic toll of lives and occasioned severe psychological traumatic experiences.

In 1720, when England was threatened with an epidemic of cholera, the Government encouraged Dr. Mead to publish a book entitled *A Short Discourse Concerning Pestilential Contagion.* This was an attempt to advise and teach prevention of disease. He stressed that instead of penalizing infected families[1] a reward should be given to those persons who discovered and reported a case of infectious disease. He stated further that instead of imprisonment of the family, the sick person should be removed to a place preferably in the country where care could be provided. Dr. Mead did not believe in fumigation, although he felt the acrid smoke of sulphur penetrated effectively a contaminated area. He advocated that all unnecessary gatherings be cancelled.

During the colonial period in America, the means of communication were limited. People traveled by stagecoach, on horseback, or on foot. There was no regular stagecoach line between New York and

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[1] The former custom, during the times of the plague, required houses in which infected persons resided to be quarantined with a mark of the sign of the cross on the door and the well persons to be shut up with the sick. The imprisonment lasted at least a month after all trace of the disease had disappeared.

Philadelphia until 1766 at which time the trip took three days. Mail was delivered irregularly.

The colonial doctor labored under the handicap of being relatively isolated from the scientific world. He needed vitality, vision, and courage.

Colonial life in the eighteenth century witnessed distressing outbreaks of disease in epidemic form.

Dr. Caulfield[2] gave a brilliant presentation of one of the catastrophic epidemics that occurred in New England between 1735 and 1740. The epidemic was referred to as "the throat distemper" but was actually three separate epidemics—one of scarlet fever and two of diphtheria. Ultimately, the whole of New England was involved starting from two points, one in New Hampshire and one in Connecticut. It was a new disease to that generation and at one point nearly one half of the children died. In the period of five years, five thousand persons died, mostly children and young people.

It is remembered that the best educated man in the New England town was the minister, and often he assumed the role of doctor. Many of the physicians of this period had no medical school background and frequently received their preparation by being apprenticed to some other doctor who had had no formal medical education either.

Lacking an understanding of bacterial infection, its cause and method of transfer, they ignored even the most elementary precautions. Ministers and physicians assisted in spreading the disease, carrying the infection on their hands and clothes, to other patients as well as to their own fam-

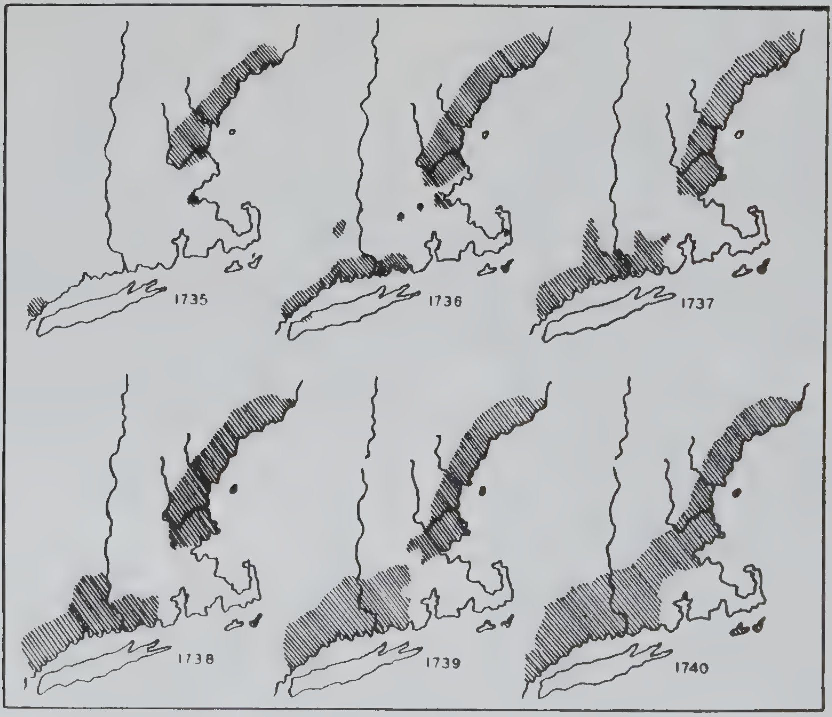

Figure 158. The progressive spread of the epidemic during the years 1735 to 1740 from the two foci, one in Connecticut, the other in New Hampshire. (Courtesy Dr. Ernest Caulfield.)

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[2] Caulfield, Ernest: *A History of the Terrible Epidemic Vulgarly Called The Throat Distemper, Which Occurred in His Majesty's New England Colonies Between 1735–1740.* New Haven, Conn., Yale Journal of Biology and Medicine, 1939.

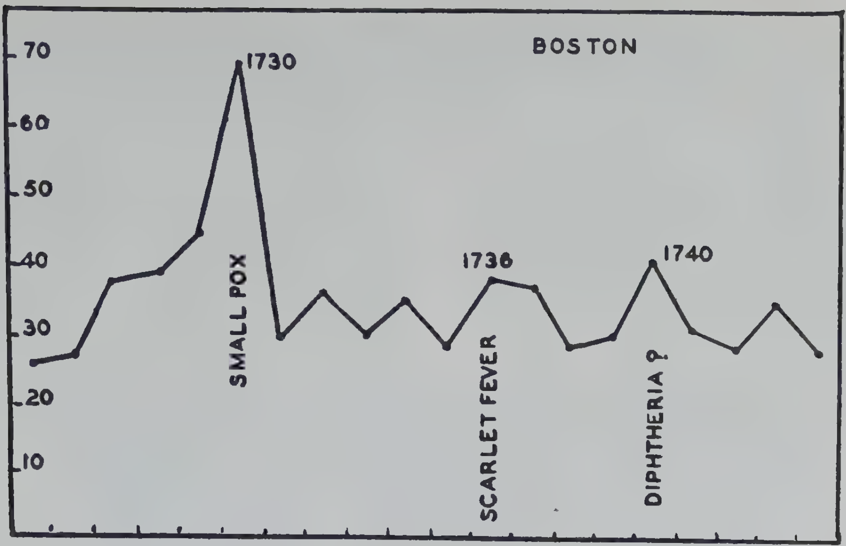

Figure 159. Boston, Massachusetts, deaths per 1000 population, for the period 1725 to 1744. Compiled from statistics in *Census of Boston for the Year 1845*, by Lemuel Shattuck (Boston, 1846). (Courtesy Dr. Ernest Caulfield.)

ilies. Caulfield states that "one of the very noticeable characteristics of the 'throat distemper' epidemic is the frequent occurrence of many deaths in the families of ministers and physicians."[3]

Each family in New England was a self-sustaining unit, having its own milk supply, water supply, produce, salted pork, and poultry. The occasions when the community grouped together were for church meetings, socials, funerals, and protection during Indian raids.[4]

One would expect that the spread of infection would be most unlikely. However, since the seventeenth century, the law decreed that towns with more than fifty families must provide for the education of the children. By 1735, public schools were established throughout New England. The schools were one-room, poorly ventilated buildings which meant close contact between the children. Another custom contributed to the spread of the infectious disease. When a child died, the neighboring children acted as pallbearers and in addition to coming in contact with the corpse, which in this period was not embalmed,[5] they associated with the dead child's family.

In Kingston, New Hampshire, the "plague of the throat" visited most of the families in town and left them childless.

Jabez Fitch (1672–1746), a minister from Portsmouth, went to many neighboring towns to gather mortality statistics. He published *An Account of the Numbers that have died of the Distemper in the Throat, Within the Province of New Hampshire.* This unusual attempt to gather scientific data resulted in giving the total number of deaths; the dates of the deaths; and the number of deaths according to age.

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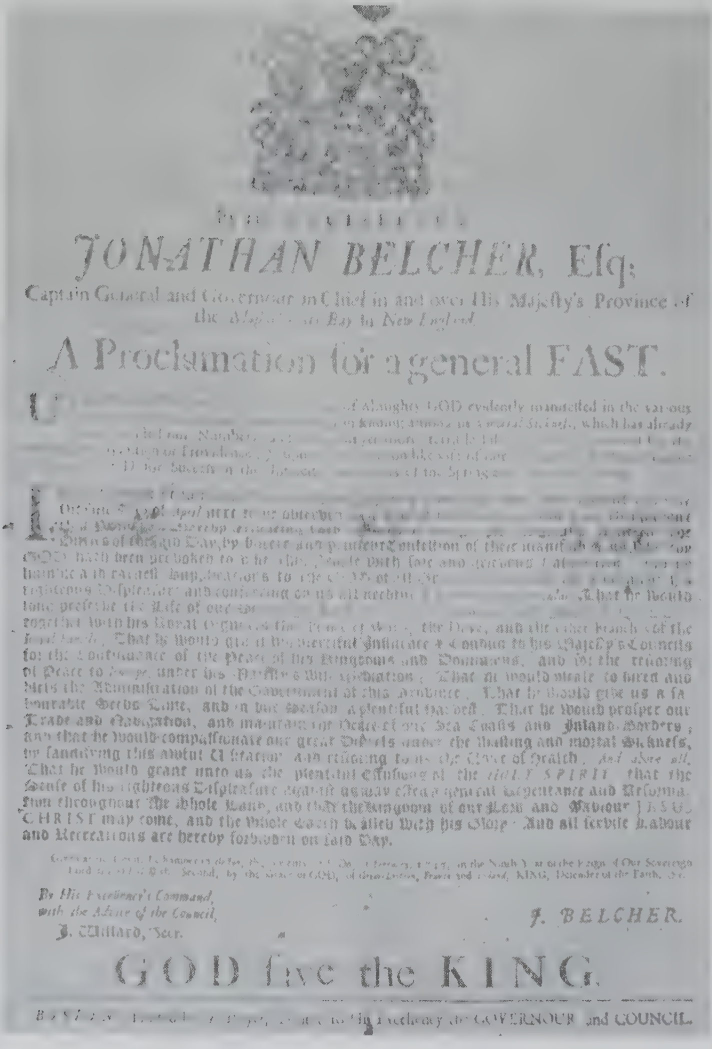
[3] *Ibid.,* p. 5.

[4] Edmonds, Walter D.: *Drums along the Mohawk.* Boston, Little, Brown and Co., 1936.

[5] The body of a person who had died was placed in a coffin and prior to burial, buckets of ice were placed under and around the coffin to assist in preserving the corpse. As the ice melted, the water was thrown out in the yard and could have been a source of infection. The impossibility of burying a body during the cold New England winter months when the ground was frozen presented a source of contagion as well as psychological trauma. When the receiving vaults were unable to accommodate any more coffins, the coffin had to be kept in the coldest place, usually the barn or attic, until the spring thaws.

approximately	81.5 per cent	(802 deaths) under 10 years of age
"	14.1 per cent	(139 deaths) between 10 and 20 years of age
"	4.3 per cent	(43 deaths) over 20 years of age
		984 approximate number of deaths for first year of the epidemic

The colonists referred to diphtheria as "canker" and to scarlet fever as "canker rash." Many physicians felt that these diseases were the same except that where a rash was not able to be brought to the surface, the disease was more severe and even fatal. The ingredients in the blood that caused the difference was some "morbifick matter." If an efficacious remedy could be applied that would allow the poisons to reach the skin surface, and evaporate through the pores, a rash would be pro-



JONATHAN BELCHER, Eſq;
Captain General and Governour in Chief in and over His Majeſty's Province of the Maſſachuſetts Bay in New England.

A Proclamation for a general FAST.

By His Excellency's Command,
with the Advice of the Council,
J. Willard, Secr.

J. BELCHER.

GOD ſave the KING.

BOSTON: Printed by ... Printer to His Excellency the GOVERNOUR and COUNCIL.

Figure 160. The Governor of the Massachusetts Bay Colony in New England proclaimed Thursday April first, 1735 to be "a day of solemn fasting with Prayer thro'out this Province on account of the unusual, malignant and mortal distemper. . . ." (Courtesy of the American Antiquarian Society.)

duced. This "morbifick matter" theory was not new and it is discussed still by older members of this generation when they stress the need for a good sweat to bring out the rash which will assist the poisons of the body to escape.

It was with thanksgiving and deep gratitude that the New England colonists welcomed the end of the "throat distemper."

A new threat evolved with the eruption of wars. When the colonies decided to fight in the War of Independence, there was no organized army since the states were not united. Each state had an army which was the spontaneous reaction to patriotism.

During the Battle of Bunker Hill, the need for a medical department for the army was recognized. The Provincial Congress of Massachusetts hired private houses and assembled medical supplies to be used for the sick and wounded. The needs were great. One doctor reported that the distress and plight of the soldiers was indescribable. They lacked shelters, bedding, clothing, and adequate food. Infectious diseases were rampant.

Despite the growing pains of a new country as well as the trials and tribulations of older ones, there were contributions in the medical fields.

DEVELOPMENTS IN MEDICAL, BIOLOGICAL, AND PHYSICAL SCIENCES

In the eighteenth century, the scientific foundations of medicine continued to be laid.

Daniel Fahrenheit (1686–1736) was born in Danzig and later became a maker of glassware in Amsterdam. He was interested in the measurement of temperatures, and his skill in blowing glass led him into producing thermometers of extraordinary reliability. He made his first thermometer in 1714. Fahrenheit used alcohol at first and then changed to mercury. The thermometer that he made had gradations which contained information such as:

fever heat	112°
human heat	96°
summer heat	76°
temperate	51°
water freezes	32°

Herman Boerhaave (1668–1738) a Dutch physician, was the first to use the mercury thermometer devised by Fahrenheit. It was ten inches in length, required fifteen minutes or more to register, and had to be held in place against the person's body. As soon as the thermometer was removed from the body, the mercury fell to room temperature; therefore, it was essential to determine the temperature while the thermometer was in place against the body. Dr. Boerhaave was a clinician of renown and an excellent teacher. He taught his students at the bedside as he made his clinical rounds.

Giovanni Battista Morgagni (1682–1771) was responsible for presenting to the medical world the idea that diseases originated in localized areas of the body, such as in organs or tissues rather than in an imbalance of humours. The concepts of localization of disease were ascertained by scholarly research. In 1761, he published a book entitled *On the Seats and Causes of Disease* which represented in an erudite fashion the fruits of his thinking, research, and teaching during the more than fifty years in which he served as professor of anatomy at Padua. This book presented in logical sequence the historical background of each disease, the symptoms, the treatment prescribed, and thence the pathological findings obtained through autopsies. The data indicated a remarkable amount of knowledge of the previously published literature on the subject.

His descriptions of many pathological conditions which were presented for the first time were fantastic pieces of research. Morgagni was a scholar, a historian, a research worker in physiology, a practitioner of medicine, and a clinical consultant.

Stephen Hales (1677–1761), an Anglican clergyman, has been remembered more for his work in biological and physical sciences than in his clerical activities. His special contribution was the research on the circulation of the blood which resulted in a method of determining blood pressure.

In 1733, he published his famous *Statistical Essays* which were a compilation of his experimental efforts during a twenty-five year period. In the chapter on "Haemastaticks," he presented a detailed account of his results in measuring the blood pressure of animals.

He gauged the pressure of the blood by inserting a twelve-foot glass tube into the carotid artery of a horse; the trachea or windpipe of a goose was used for a connective link. Hales noticed that the blood rose and then fell inside the tube in an alternating rise and fall. The height increased during periods of activity on the part of the horse. Thus, he observed the effect of an increased heart rate as a result of effort and strain. Hales did exhaustive work on cardiovascular physiology that laid the necessary groundwork for research that was continued in the next century.

James Lind (1716–1794) discovered the solution to the ghastly problem of scurvy which had bedeviled soldiers and sailors from the days of the Crusades. The disease was known to the ancient cultures but did not become a major catastrophe until long journeys were undertaken with sailors dependent upon rations that had to be stored for many months. Scurvy, a severe vitamin deficiency, had taken a greater toll of lives than all naval warfare.

At an early age, Lind was apprenticed to a physician in Edinburgh, Scotland, and later joined the Royal Navy as a surgeon's mate. During this period, he encountered much scurvy as well as tropical diseases and was concerned about the entire problem of naval hygiene: rat-infested ships, difficulties inherent in obtaining and preserving food, and the personal hygiene of the sailors.

In 1747, Lind carried out an experiment with twelve men who had succumbed to scurvy. He had six groups with two men to each group; he added different items to the diet of each of the groups of men. The most startling response was noted in the two men to whom he gave citrus fruits—oranges and lemons.

The results of his careful observations, deliberations, and experimentation were reported in his works, *An Essay on the Most Effectual Means of Preserving the Health of Seamen in the Royal Navy,* in 1757, and *An Essay on Diseases Incidental to Europeans in Hot Climates,* in 1768. These writings embodied his suggestions for the care of the patient with scurvy, for upgrading the hygiene and sanitary environment of sailors, and for a better comprehension of tropical diseases.

In addition to the need for citrus fruits in the diet to prevent as well as cure scurvy, his recommendations included: the need for baths and issuance of clean clothing for sailors to curtail the spread of typhus; an organized program of physical exercise to keep the sailors in good condition; a method of distilling salt water to obtain fresh water; a plan for physical examinations with proper notations on physical record sheets; the use of cinchona bark to prevent malaria; the inadvisability of going on shore leave in the tropics where malaria was prevalent; and lastly, the necessity of issuing uniforms for cleanliness, to increase morale, and aid recruitment of sailors.

Lind did not live to see his suggestions adopted, but his pioneering efforts in prevention of disease, in the use of an experimental method of gathering data, have been rewarded. Members of the British navy—often referred to as "limeys"—were probably the first group to receive vitamin therapy.

William Hunter (1718–1783) of Scotland was an anatomist, skilled in dissection and a lecturer in anatomy. The anatomical school which he opened in 1746 was a most famous one in London. He became interested eventually in obstetrics and excelled in this field, becoming physician-extraordinary to Queen Charlotte, wife of King George III. He published *The Anatomy of the Gravid Uterus* in 1774. However, his brother John outshone William in many areas of endeavor.

John Hunter (1728–1793), the younger brother of William, joined him in his teaching venture and was skilled remarkably in this role. John had a natural aversion to formal learning for himself but had rare ability to absorb information and disseminate it in a clear, forceful fashion.

In his school, William Hunter was responsible for providing bodies for dissections. It was John Hunter whose frolics with the so-called *"resurrectionists,"* (men who could be bribed into obtaining corpses from the Potter's Field or various other ways) resulted in his obtaining these necessary bodies.

Surgical technique and experience had been in the realm of the barber-surgeons during the past several hundred years. John Hunter's major accomplishments were in practicing surgery and lecturing on anatomy and surgery. In 1776, he was appointed surgeon-extraordinary to the king and in 1789 was named surgeon-general of the army. Paget has stated: "Paré advanced the art of surgery, but Hunter taught the science of it."

The body of John Hunter reposes in Westminster Abbey and the plaque inscription reads: "The Founder of Scientific Surgery."

Leopold Auenbrugger (1722–1809), an Austrian physician, became acutely interested in the processes of disease, especially of the chest. He noticed that when the chest of a healthy person was tapped lightly it sounded like a muffled drum, while in a sick person, the sounds varied especially if the person had an infectious involvement of the chest. He checked his own reasoning as he inspected the findings at autopsies. In 1761, he published a small brochure entitled *On Percussion of the Chest.*

From time immemorial, *smallpox* had been one of the major scourges of society. The method used by the ancient Chinese has been presented; Rhazes' work in describing the disease has been mentioned; and the wife of the British Ambassador to Turkey, Lady Mary Wortley Montagu (1689–1762) was responsible for introducing to Europe the practice of preventive inoculation against smallpox. After six condemned prisoners of Newgate Prison volunteered for experiments and won their freedom by being inoculated successfully, King George I permitted his two granddaughters to be inoculated. Thereafter, this preventive treatment was received warmly in Britain.

In 1721, after the infected crew of a vessel from the West Indies landed in the New England colonies, half the population of Boston developed smallpox. About one fourth of these patients died. This was Boston's sixth smallpox epidemic in a century. In 1721, *Cotton Mather* (1663–1728) wrote an "Address to the Physicians of Boston" beseeching them to resort to inoculation.

One of the physicians, *Dr. Zabdiel Boylston,* was willing to try Mather's suggestion. He was successful in his project and at the end of the epidemic, he had inoculated 286 persons, of whom six died (one in forty-six; the mortality rate for naturally acquired smallpox was one in six.)

During the Revolutionary War, the American armies suffered acutely from smallpox. After the Battle of Bunker Hill in 1775, Howe's forces occupied Boston, but his soldiers were incapacitated because of the smallpox epidemic. Washington's meager group of men was stationed in neighboring hills. *General Washington* ordered those men in the army who had not had smallpox to be inoculated. When the British evacuated Boston in 1776, Washington's immunized troops took over the city.

Figure 161. George Washington at Valley Forge. (Courtesy National Library of Medicine, Washington, D.C. Neg. No. 40–922.)

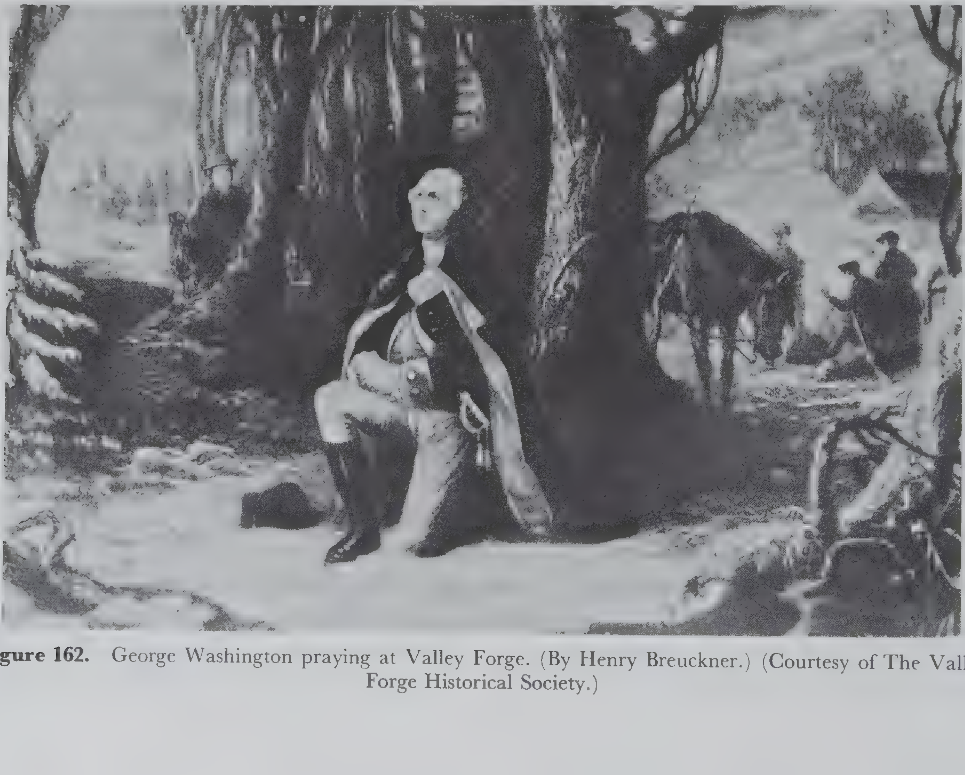


Figure 162. George Washington praying at Valley Forge. (By Henry Breuckner.) (Courtesy of The Valley Forge Historical Society.)

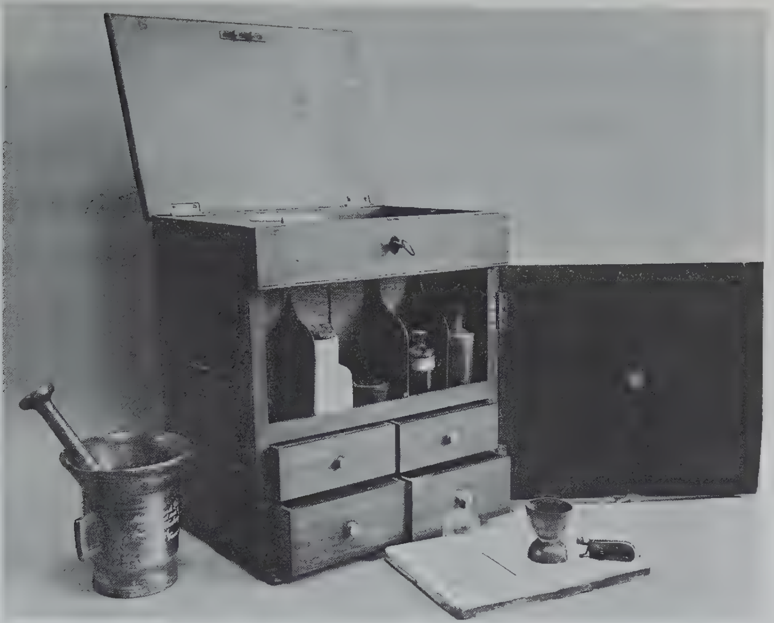


Figure 163. The medicine chest, mortar and pestle, bleeding knife and cup used by General Washington at Valley Forge as well as at Mount Vernon. (Courtesy of Ronald E. Heaton, Valley Forge Museum of American History.)

There were several types of variolation or inoculation such as an arm-to-arm inoculation in which the matter from smallpox pustules was rubbed onto the arm of a healthy person in the hope of conferring immunity. There was always the chance of contracting the disease itself.

Another method consisted of making minute incisions into which some of the variolus pus on cotton was introduced; still another was a thread dipped into the pus and strapped to the arm. Gradually, the methods became more complicated until all were replaced by the newer vaccination described by Jenner in 1798.

Edward Jenner (1749–1823) started his medical career as a student at St. George's Hospital in London and was apprenticed to and studied under John Hunter, living in his home for two years. Hunter's advice to Jenner to be willing to experiment probably motivated the project for which he received international recognition.

In 1796, when cowpox appeared on a farm, Jenner obtained some of the pus from a sore on the hand of one of the dairy maids. He introduced this matter (cowpox virus) by superficial pinprick incisions into the arm of a healthy eight year old boy named James Phipps. The vaccinated spot developed a small pustular sore, followed by a scab and a scar. The vaccination proved to be successful when six weeks later Jenner tried to inoculate the boy with smallpox virus. The inoculation failed to take, indicating James's immunity to smallpox. He reported his results in 1798 in a booklet entitled *An Inquiry into the Causes and Effects of the Variolae Vaccinae.*

Through vaccination and sound quarantine measures, smallpox has been controlled in many areas of the world. The discovery of vaccination led to the new science, immunology. The way was clear for research on immunizing man against many diseases.

In the area of psychiatry, the efforts of two gentlemen have been publicized.

Benjamin Rush (1745–1813) was born in Philadelphia of Quaker parentage. At the

Figure 164. Portrait of Dr. Benjamin Rush by Thomas Sully. (Courtesy of the Pennsylvania Hospital. In: *Some Account of the Pennsylvania Hospital from 1751 to 1938.*)

age of fifteen, in 1760, he received an A.B. degree from the College of New Jersey (now Princeton). The course there consisted primarily of Latin, Greek, and mathematics because at that time no science was offered. Medicine appealed to him, and so he became apprenticed to a Dr. Redman on the staff of the Pennsylvania Hospital for five and a half years. It is interesting to note that Dr. Redman encouraged Benjamin Rush to keep an educational diary called a "commonplace book" into which he inscribed valuable information about patient care.

Rush went to the University of Edinburgh from which he obtained an M.D. in 1768. He became professor of chemistry in the College of Philadelphia, then a professor of medicine when the latter merged into the University of Pennsylvania.

Politics absorbed some of his time and energies, and he was appointed surgeon-general of the army. In 1777, he wrote a directive *To the Officers of the Army of the United States: Directions for Preserving the Health of Soldiers.* Rush was one of four physicians to sign the Declaration of Independence. In 1783 he joined the staff of the Pennsylvania Hospital and while there he introduced clinical instruction.

Among the patients assigned to him were twenty-four "lunatics." These patients were given no treatment medically and were subjected to discomforts and dampness. Benjamin Rush protested against the improper treatment until the

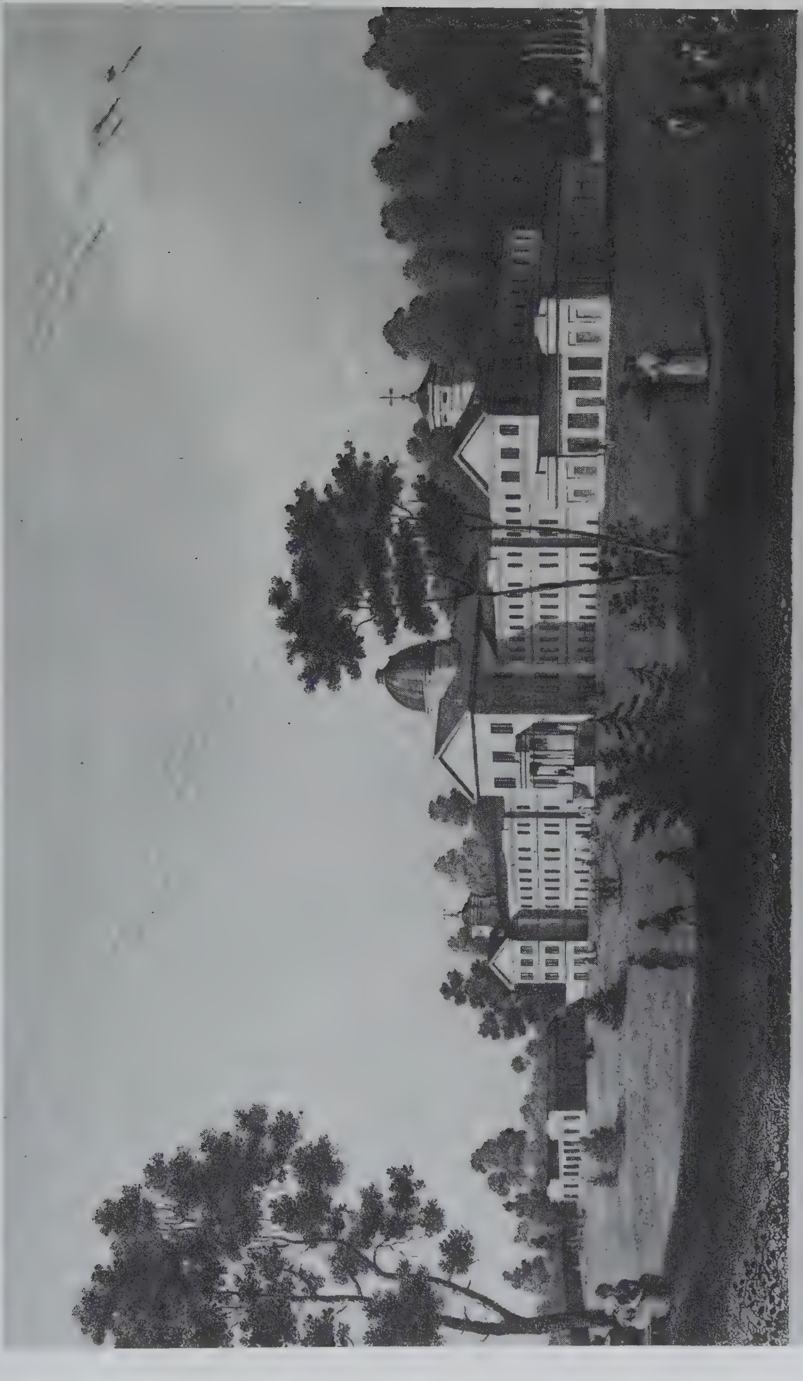


Figure 165. Pennsylvania Hospital for the Insane. (Courtesy of the Pennsylvania Hospital. In: *Some Account of the Pennsylvania Hospital from 1751 to 1938.*)

legislature appropriated $15,000 for the construction of a ward for the insane. At a time when bathtubs were considered a luxury, he requested and received hot and cold baths for the patients.

He called attention to the need for diversional therapy for psychiatric patients; for suitable companions to listen sympathetically to patients, letting them relieve their subconscious by talking; for a plan for recreation and amusement; and for personnel to direct these activities; and, lastly, to separate the mentally ill from those who were convalescing. His requests were granted eventually. In addition to his modern, progressive thinking, he also resorted to bloodletting, violent purging, and the use of a special type of chair called a "tranquilizer."

In 1812, Rush wrote an outstanding monograph on insanity, *Medical Inquiries and Observations upon the Diseases of the Mind.* His treatments were palliative, while the cause of mental illness remained unsolved.

In 1786, Rush founded the Philadelphia Dispensary, the first of its kind in this country.

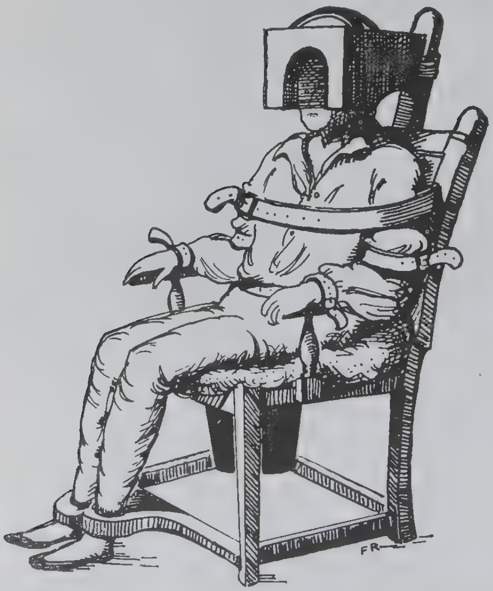


Figure 166. A picture of Dr. Rush's tranquilizer chair. (Courtesy of The Pennsylvania Hospital. In: *Some Account of the Pennsylvania Hospital from 1751 to 1938.*)

In 1793, Philadelphia was immersed in a catastrophic outbreak of *yellow fever.* The account of this epidemic was written by Rush in an extremely realistic fashion. He worked laboriously and heroically during this epidemic. Panic and pandemonium reigned. At one point, there were three physicians to care for 6,000 persons. Philadelphia lost 5,000 persons or one tenth of the population of that city.

In *The Rhode-Island Almanack, with an Ephemeris, for the Year of Our Lord 1794,* the following article appeared:

> Dr. RUSH's Directions, for curing and preventing the YELLOW FEVER.
>
> As soon as you are affected (whether by night or day) with a pain in the head or back, sickness at stomach, chills or fever—more especially if those symptoms be accompanied by a redness, or faint yellowness in the eyes, and dull or shooting pains about the region of the liver, take one of the powders[6] in a little sugar and water, every six hours, until they produce four or five large evacuations from the bowels—drink plentifully gruel, or barley water, or chicken water, or any other mild drink that is agreeable, to assist the operation of the physic. It will be proper to lie in bed while the medicine is operating, by which means a plentiful sweat will be more easily brought on. After the bowels are thoroughly cleansed, if the pulse be full or tense, eight or ten ounces of blood should be taken from the arm, and more, if the tension or fulness of the pulse should continue. Balm tea, toast and water, lemonade, tamarind water, weak camomile tea, or barley water, should be drank during this state of the disorder, and the bowels should be kept constantly open, either by another powder, or by small doses of cream tartar, or cooling salts, or by common opening blisters; but if the pulse should become weak and low after the bowels are cleansed, infusions of camomile and snake root in water, elixir of vitriol and laudanum, also wine and water, or wine, punch, and porter, should be given, and the bark either in infusion, in water, or in substance, may be administered in the intermission of the fever. Blisters may likewise be applied to the sides, neck, or head, in this state of the disorder and the lower limbs may be wrapped up in flannels wetted in hot vinegar or water. The food should consist of gruel, sago, panda, tapioca, tea, coffee, weak chocolate, wine whey, chicken broth, and the white meats, according to the weak or active state of the system. The fruits of the season may be eaten with advantage at all times.

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[6] Each powder consisting of ten grains of calomel, and fifteen of jalap, for an adult.

> Fresh air should be admitted into the room, in all cases, and cool air when the pulse is full and tense. The floor should be sprinkled now and then with vinegar, and the discharges from the body be removed as speedily as possible.
>
> The best preventatives of the disorder, are a temperate diet, consisting chiefly of vegetables, great moderation in the exercises of the body and mind, warm clothing, cleanliness, and a gently open state of the bowels.

Benjamin Rush was one of the great men of medicine in the annals of American history.

Phillippe Pinel (1745–1826) was born in a small village in central France. At a time in the history of France during the days of the French Revolution, the citizenry cried for liberty, equality, and fraternity. Yet these were absent in the treatment of the mentally ill. Pinel, normally a timid man of slight, slender build, demanded justice for these patients.

In 1793, a council of three men was responsible for the administration of the Hospital of Paris. Recognizing the worth and ability of Pinel, this council sent for him and informed him that he was the one man in France capable of bringing order out of chaos that was reigning in the insane asylums. He was appointed thereupon to the position of physician-in-chief to the Bicêtre. A description of this institution is impossible, but it was also a prison. The patients who were mentally ill were chained to walls, posts, or beds. Violence was the only treatment they received. For a fee, curiosity-seekers could obtain amusement from watching these sufferers.

After assuming his new position, he obtained permission from the proper authorities to remove the chains from these patients. A sudden complete revolution of human intelligence occurred that demonstrated the efficacy of this new method.

In 1795, he joined the Salpêtrière Hospital founded by Louis XIV to care for poor beggars of Paris. The hospital also provided care for the insane.

Pinel advocated separating the patients

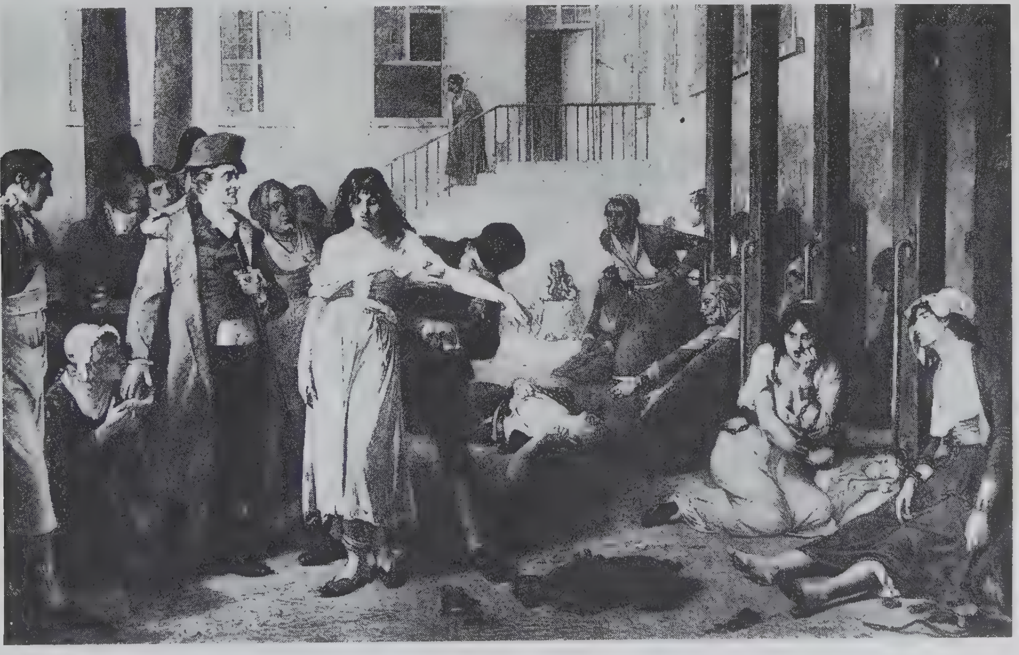

Figure 167. The mentally ill at the Salpêtrière are liberated from their chains by Philippe Pinel, 1795. (Ciba Symposia, 1950.)

who were agitated from those who were calm. To Pinel credit goes for systematizing mental diseases according to symptomatology. This gentle man taught by setting an example of gentleness.

In the field of *infant welfare,* much needed to be done. St. Vincent de Paul had championed the cause of the abandoned child in the preceeding century. The problem had become a more serious one in the eighteenth century.

Dr. Caulfield[7] has presented in a scholarly fashion the plight of infants in England during this period and those who tried to alleviate their sufferings.

On the part of the public, there was an attitude of callousness and indifference in a setting of wholesale infanticide. This viewpoint had to be changed before appreciable progress towards reducing infant mortality could be attempted. Records are replete with evidence of neglect, cruelty, and sickness as well as infanticide. The exact statistics are not available, but in the early part of the century, the infant mortality rate for children under five years of age was 50 per cent. In London, between 1730 and 1750, 75 per cent of all the babies christened were dead before the age of five. Even Queen Anne who presumably received the best of care, lost eighteen children in early infancy. It is recalled that the delivery of women was entrusted to midwives as was the care of newborn infants.

The greatest cause of death in infancy was neglect. Wealthy women delegated the care of the children to nursemaids. The infant was nursed either by a wet nurse, which could mean transfer of disease to the child, or by "dry nursing," or bottle-feeding, which meant the possibility of contracting disease from contaminated milk and water. It has been pointed out that the children of the wealthy were neglected because of fashion while the poor were abandoned because of poverty.

There was a constant supply of wet nurses available due to the deaths of their own babies. It has been stated that "in some cases the infant mortality was the source of the wet-nurse supply; in other cases, the effect."

"Dropping" of infants was a common occurrence. This meant abandoning the

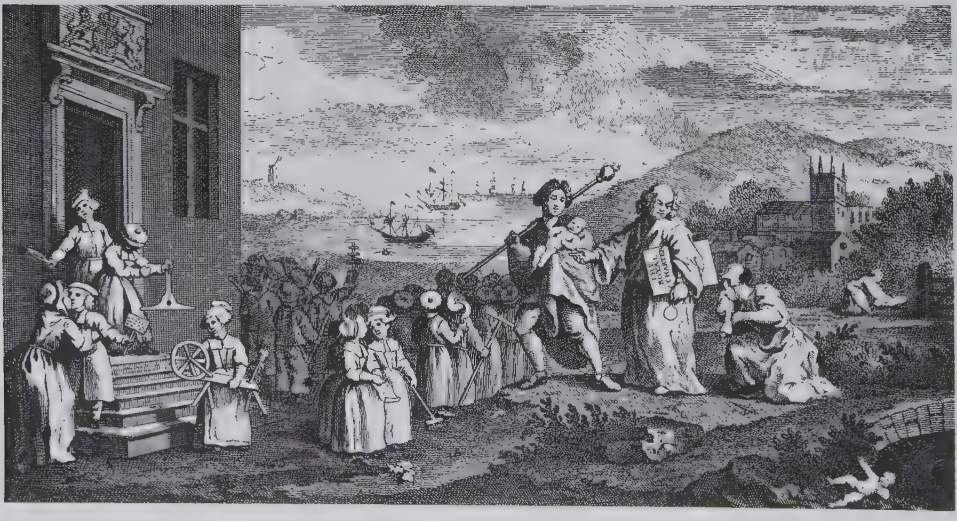

Figure 168. Hogarth's conception of the foundlings. On the extreme right are two "dropped" infants. (Caulfield: *The Infant Welfare Movement in the Eighteenth Century.* Hoeber, Inc.)

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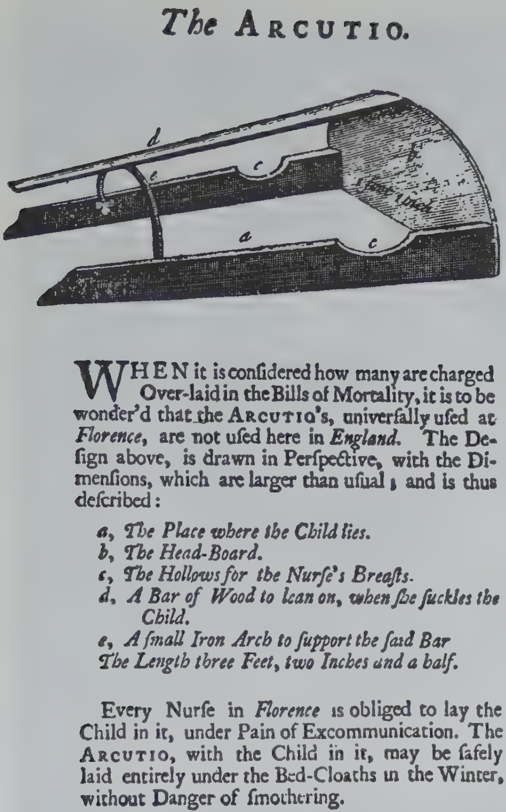
[7] Caulfield, Ernest: *The Infant Welfare Movement in the Eighteenth Century.* New York, Paul B. Hoeber, 1931.



The ARCUTIO.

WHEN it is conſidered how many are charged Over-laid in the Bills of Mortality, it is to be wonder'd that the ARCUTIO's, univerſally uſed at *Florence*, are not uſed here in *England*. The Deſign above, is drawn in Perſpective, with the Dimenſions, which are larger than uſual; and is thus deſcribed:

a, The Place where the Child lies.
b, The Head-Board.
c, The Hollows for the Nurſe's Breaſts.
d, A Bar of Wood to lean on, when ſhe ſuckles the Child.
e, A ſmall Iron Arch to ſupport the ſaid Bar
The Length three Feet, two Inches and a half.

Every Nurſe in *Florence* is obliged to lay the Child in it, under Pain of Excommunication. The ARCUTIO, with the Child in it, may be ſafely laid entirely under the Bed-Cloaths in the Winter, without Danger of ſmothering.

ARCUTIO USED TO PREVENT OVERLAYING.

Figure 169. The arcutio. Caulfield: *The Infant Welfare Movement in the Eighteenth Century*. Hoeber, Inc.)

infant on the doorstep of wealthy homes[8] or just leaving a child in the street to freeze or starve. Unmarried women murdered their offspring occasionally to earn a livelihood as a wet nurse.

Other causes of death as they were reported in this century were: *headmouldshot* or the overriding of the sutures of the cranium, and this included birth injuries to the meninges that resulted in death; *horshoehead* or the separation of the sutures comprising congenital defects of the cranium; *overlaid* which was due to the practice of nurses' sleeping with infants[9] as well as to the tightness of the stay. The stay consisted of the strings attached to the cap which were tied tightly under the baby's chin, and this cap was worn day and night to prevent chilling.

There were some efforts to alleviate this serious situation. *Thomas Coram* (1668–1751) was moved to do something. It was he who had been instrumental in bringing over and settling in America poor families, known as Oglethorpe's Colony in Georgia. His plan involved erecting huts for deserted infants in which they were to be cared for and nourished properly. He labored for seventeen years on this project, exhausting his funds, then appealed to influential ladies for assistance. Thus, in 1738, the Hospital for Foundlings in London came into being. So many children were brought to this institution that they had to be selected by lot.

William Cadogan (1711–1797), who graduated from Oxford on June 20, 1755, with the degree of M.A., and on June 27, 1755, he received the degrees of Bachelor of Medicine and Doctor of Medicine, wrote "An Essay upon Nursing and Management of Children." In this, he advocated loose clothing and frequent change of clothing at a time when the body and limbs of a baby were cramped in flannels, swaths, and wrappers. Wrapping babies in swaddling clothes had been a custom for ages. Dr. Cadogan also stressed the value of daily baths during an era of thinking that to even wash a baby's head meant subjecting the baby to a cold.

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[8] *The History of Tom Jones, A Foundling* (1749), by Henry Fielding. One of the great realistic novels, the story of Tom Jones begins with Squire Allworthy's finding him, an infant, crying in his bed. When the baby was discovered, one of Allworthy's comments was, "I suppose she hath only taken this method to provide for her child; and truly I am glad she hath not done worse."

[9] *Pamela* (1740), by Samuel Richardson, was a domestic novel, the first modern novel, a story in a series of letters. It was a novel idea to use scenes common to ordinary life. (Nurses were sometimes paid to overlay babies.)

The History of the Adventures of Joseph Andrews and His Friend Mr. Abraham Adams (1742), by Henry Fielding. A satire on Richardson's *Pamela*.

Figure 170. Two women with a newborn, tightly swaddled child. Painting by Georges de la Tour *ca.* 1600–1652). (Museum in Rennes. Ciba Symposia, 1940.)

The Foundling Hospital sent printed instructions to all foster mothers for the treatment of minor illnesses.

Jonas Hanway (1712–1786), a philanthropist, was appointed one of the governors of the Foundling Hospital and studied its problems. He became interested in parish workhouses, which were an outgrowth of the English poor laws. The parish workhouse movement, beginning about 1723, was an effort to provide quarters for the poor who were unable to support themselves and their infants. The populace was astonished at the conditions described by Hanway, which had existed for some time. He was successful in persuading Parliament to enact laws for the relief of these infants.

George Armstrong (*ca.* ? –1781) was one of the first English pediatricians. He possessed unusual powers of observation and was an ardent advocate of infant welfare. He was the prime leader behind the dispensary movement. On April 24, 1769, he opened the Dispensary for the Infant Poor. Some important rules he laid down for the parents of patients were: The babies were to be kept neat and clean, and the parents were to preserve order, be thankful for treatment, and report on the progress of their children.

He recorded this rich experience at the dispensary in *An Account of the Diseases Most Incident to Children* which was published in 1771, revised in 1777, and revised again in 1783. This early pediatric textbook presented his diagnostic ability because he wrote about what he saw.

It was Dr. Armstrong who was one of the first to realize that many mothers wanted to nurse their infants but were unable to do so. Dry nursing was recommended. He suggested also that rubbing a baby gently was a soothing remedy, this before the days of psychological experiments.

Infanticide continued to be a public problem into the nineteenth century.

Alchemy was losing prestige, and the science of *chemistry* was in the incipient stage. Several outstanding chemists and apothecaries contributed to a firm foundation in this century.

Henry Cavendish (1731–1810) prepared hydrogen, referred to as inflammable air, by treating iron with acids. He demonstrated that when hydrogen and oxygen were burned, water was obtained.

Joseph Priestley (1733–1804) published in 1767 a *History of Electricity* which contained a chapter on medical electricity. Another publication discussed his observations on different kinds of air: fixed air (carbon dioxide); inflammable air (hydrogen); nitrous air (nitrous oxide) which he discovered; and hydrochloric acid gas which was another one of his laboratory findings. His greatest contribution was the discovery of oxygen. He became a Unitarian minister and quite unpopular in his community. During a celebration of the fall of the Bastille, the distraught townsfolk set fire to his chapel, house, and even destroyed his manuscripts and scientific apparatus. In dismay, Priestley fled first to London and thence to the United States.

Karl Scheele (1742–1786) was apprenticed for eight years to an apothecary in Sweden who permitted him to experiment in his laboratory. To this generous tutor the efforts and accomplishments of Karl Scheele were due. This master not only encouraged Scheele in his thinking and experimenting but also permitted him the use of his extensive library.

Scheele continued his endeavors during the three years of clerkship at a pharmacy. The world owes a debt of gratitude to the two gentlemen under whom Scheele flourished because rather than assign busy work and menial tasks they permitted him to grow academically.

His discoveries and publications contained information about oxygen, chlorine, fruit acids, tungsten, molybdenum, and glycerin.

Antoine Lavoisier (1743–1794) was a wealthy, well educated youth, and owned a laboratory in which he experimented. Priestley and Scheele had isolated oxygen; Lavoisier discovered its uses. It was to him that the credit is due for an understanding of the physiology of respiration. He established an understanding of how we breathe, how oxygen is utilized and carbon dioxide is expired during respiration.

At the beginning of the French Revolution, Lavoisier was declared an enemy of France, found guilty, and executed on the guillotine.

Abbé Lazzaro Spallanzani (1729–1799) was a well educated gentleman, and a priest who taught at several universities. His interest in research led to information on the digestive processes. He corrected and expanded Lavoisier's theory about oxidation taking place in the lungs and stressed the part the tissues play in respiration, consuming oxygen and giving off carbon dioxide.

Another important contribution was an additional wedge in the defeat of the theory of abiogenesis. He believed that if flasks of broth were sealed hermetically and the heat applied long enough no organisms would be found in it. This was a reinforcement of Redi's beliefs.

Benjamin Franklin (1706–1790) has been well known for his contributions to American medicine. He introduced the concept of positive and negative electricity, and it has been stated that he treated paralysis with electrical currents. Included among his achievements to benefit human society are the invention of bifocal lenses, fireplaces and street lamps, acts of statesmanship including the signing of the Declaration of Independence, and the foundation and successful guidance of the Pennsylvania Hospital. He wrote a history of this hospital, printing it at his own press in 1754.

Luigi Galvani (1737–1798) observed that weak electrical currents caused muscles to contract. He proposed that metals coming in contact with each other generated electricity. Due to his observations and experimentation, he published his famous experiments on electrical stimulations of muscle-nerve preparations in 1792. His discovery laid the foundation for electrophysiology.

Alessandro Volta (1745–1827) invented the epoch-making electric battery. His research showed that a muscle can be placed in a state of continuous contraction or tetany by successive electric stimulations. This led to the use of electric currents in the treatment of disease.

Frequently the doctor functioned as an apothecary. *Apothecaries* who were not also physicians were in the minority. During the American Revolution, an apothecary, *Andrew Craigie,* was appointed America's first apothecary-general. He attended Boston Latin School, which seems to be where he received his preparation in pharmacy. His home in Cambridge, Massachusetts, called the Craigie House, was later used by Henry Wadsworth Longfellow.

The field of *pharmacy* continued to benefit mankind. The Marshall Apothecary was established in Philadelphia in 1729 by *Christopher Marshall* (1709–1797), an immigrant from Dublin, Ireland. His apothecary was the first practical or proprietary school for the training of pharmacists, from which sprang America's first college of pharmacy, Philadelphia College of Pharmacy. His son Charles Marshall became its first president in 1821. During the Revolutionary War, Christopher Marshall took care of the sick and wounded in the hospitals of Philadelphia. In 1804, Christopher's granddaughter Elizabeth took over the management as *America's first woman pharmacist.*

The *education* of the members of the medical team in this period was sketchy. Many laymen functioned as physicians without an earned degree of doctor of medicine. Apothecaries received little formal educational preparation but had an apprenticeship and much practical training and experience. The M.D. degree was only of relative significance and required various types of preparation including a certain amount of apprenticeship with an apothecary or a surgeon, a semester or two of university classes, a course of study at a dissecting or anatomical school or at one of the hospitals. Any combination of these suggestions could suffice, and the gentleman then applied for and received an M.D. degree.

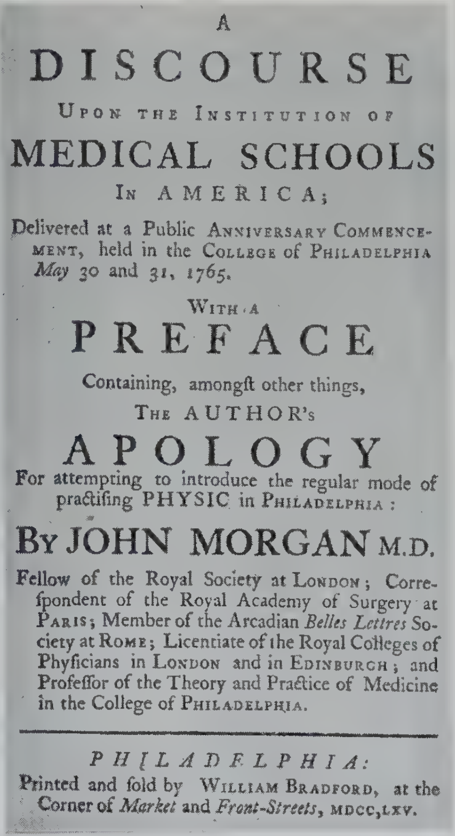
There was no medical school in the English colonies until 1765, and it was very costly to go to Europe for medical preparation.

In North America, the pioneer in medical education was *John Morgan* (1735–1789). He was born of wealthy parents in Philadelphia. Graduated in 1757 from the College, Academy and Charitable School of Philadelphia, he received an A.B. degree with the first class. He had served as an apprentice to a leading physician and also as a resident apothecary to the Pennsylvania Hospital. This was followed by four years as an army surgeon in the French and Indian Wars.

Morgan spent several years abroad where he worked with the Hunters, studied with Morgagni, and enrolled as a student

Figure 171. Dr. John Morgan (1735–1789). (From the painting by Angelica Kaufmann. Ciba Symposia, 1947.)

in Edinburgh from which he graduated in 1763 with the degree of M.D. His doctor's thesis was a brilliant presentation on the formation of pus. Wherever he went, honors were heaped upon him.



A
DISCOURSE
UPON THE INSTITUTION OF
MEDICAL SCHOOLS
IN AMERICA;
Delivered at a Public ANNIVERSARY COMMENCEMENT, held in the COLLEGE of PHILADELPHIA *May* 30 and 31, 1765.
WITH A
PREFACE
Containing, amongſt other things,
THE AUTHOR's
APOLOGY
For attempting to introduce the regular mode of practiſing PHYSIC in PHILADELPHIA:
BY JOHN MORGAN M.D.
Fellow of the Royal Society at LONDON; Correſpondent of the Royal Academy of Surgery at PARIS; Member of the Arcadian *Belles Lettres* Society at ROME; Licentiate of the Royal Colleges of Phyſicians in LONDON and in EDINBURGH; and Profeſſor of the Theory and Practice of Medicine in the College of PHILADELPHIA.

PHILADELPHIA:
Printed and ſold by WILLIAM BRADFORD, at the Corner of *Market* and *Front-Streets*, MDCC,LXV.

Figure 172. Title-page of Morgan's *Discourse*, where his plans for a medical school were formulated. (Ciba Symposia, 1947.)

He returned to Philadelphia fired with the desire to establish a medical school comparable to those in Europe. It was his firm conviction that a medical school should not be a private venture or proprietary school but rather should be an integral part of a college or university. He emphasized the need for a good premedical preparation including Latin, a modern language, mathematics, and natural science. His opinions were presented in *A Discourse upon the Institution of Medical Schools in America,* which summarized logically the needs for housing the school for a profession in an institution of higher learning; for proper study of sciences starting with the anatomical structure of the body in order to understand health, illness, and as a *sine qua non* for surgeons. Materia medica, botany, and chemistry were essential to an understanding of diet and medicine and of their properties, including a realization of the creation of new substances formed from the change resulting within the body. Thus would a strong foundation in science be laid for the building of a curriculum in medicine.

It was Dr. Morgan's belief that all practicing physicians should have a comparable background of planned instruction which was impossible with the apprenticeship system. He advocated planned clinical lectures to be given in the clinical setting of the Pennsylvania Hospital.

Another point which his adversaries rebelled against was the separation of the duties of pharmacist from that of medicine and surgery. This practice had arisen in the Colonies out of necessity. In Europe

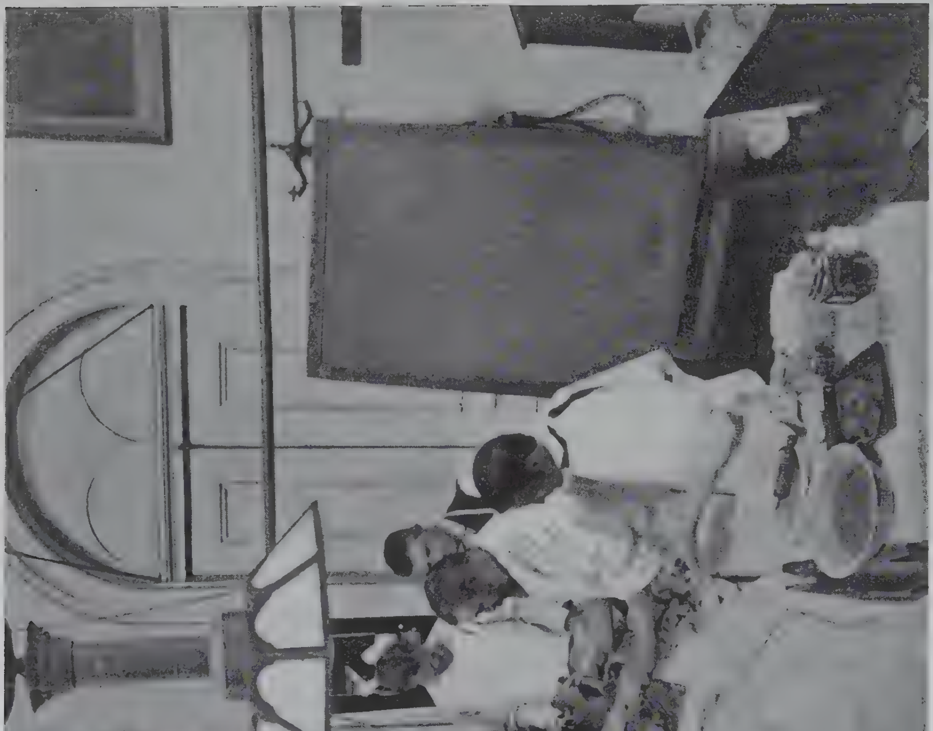


Figure 173. The clinical amphitheater in 1892. (Courtesy of The Pennsylvania Hospital. In: *Some Account of the Pennsylvania Hospital from 1751 to 1938.*)

pharmacy and medicine were separate entities. Morgan stressed that prescriptions should be filled by a competent apothecary.

The College of Philadelphia opened in 1765 and Dr. Morgan became the first professor of medicine in the Colonies. Although political strife and warfare disrupted some of its plans and activities, the cornerstone had been laid for medical education in North America.

Finally, medical schools opened: in 1765, at the College of Philadelphia (later the University of Pennsylvania); in 1768, at King's College in New York; in 1783, at Harvard; in 1798, at Dartmouth; and, in 1799, at Transylvania University in Lexington, Kentucky.

An educational struggle was brewing between those who learned by training and experience, and those who were well grounded in the theory of scientific investigation. King[10] presents a letter written by Oliver Goldsmith in 1759 comparing preparation received in Edinburgh and in Oxford; this portrays the old versus the newer type of preparation.

Another quaint custom of this period was that of itinerant oculists going throughout the colonies with boxes of glasses to be tried on and selected for assistance in reading.

The sickroom scene of a famous patient is worthy of consideration at this point. On a rainy, bleak, dreary day in December of 1799, George Washington developed a cold accompanied by a severe sore throat. Soon he had great difficulty in breathing and swallowing. The remedies that were prescribed consisted of mixtures of molasses, vinegar, and butter to drink; bleeding done by the overseer of the farm at least three times removing almost two quarts of blood; rubbing a menthol-type preparation on his throat and then wrapping a piece of flannel saturated with this preparation around his neck; applying a poultice of Spanish flies (made from dried and powdered beetles) to his throat; setting up a vinegar and hot water steam inhalation; and giving calomel as a laxative together with tartar as an emetic. Consultants were summoned and a diagnosis was made by observing the external symptoms. The throat was not inspected nor the chest listened to. The first diagnosis was quinsy, which was the name given to the condition of a tonsillar abscess. The final diagnosis was "Cynanche trachealis."[11]

It is now believed that diphtheria was the disease, but the bacterial infection coupled with the medical care that he received was the cause of death.

One of the doctors called in on consultation wanted to do a tracheotomy to assist him in breathing and also argued against bleeding because he felt this weakened the patient.

Skilled nursing care is not mentioned as there were no nurses present.

PROGRESS IN NURSING AND SOCIAL SCIENCE

Many social as well as physical problems existed at this time. The need for social legislation to relieve the afflictions of the people of this period has been presented in the earlier sections of this chapter.

Women continued to minister to the needs of their families and neighbors. To stay alive in the colonies was a challenge; the women were courageous and heroic. Without central heating, fireplaces were

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[10] King, Lester S.: *The Medical World of the Eighteenth Century.* Chicago, University of Chicago Press, 1958, pp. 28–29.

[11] Cynanche trachealis was an old technical term for croup. Packard in *A History of Medicine in the United States* states that in 1662 the General Assembly of Connecticut declared a day of thanksgiving for deliverance from this affliction.

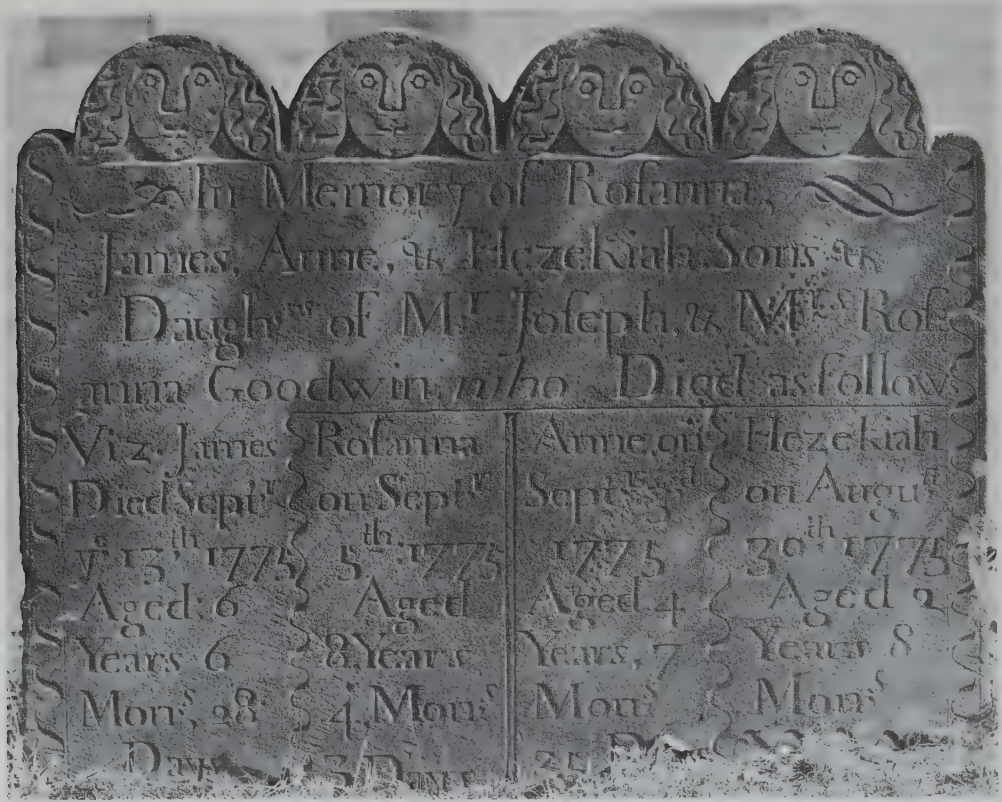
In Memory of Roſanna,
James, Anne, & Hezekiah Sons &
Daughtrs of Mr Joseph & Mrs Roſ
anna Goodwin who Died as follows
Viz. James Died Septr ye 13th 1775 Aged 6 Years 6 Mons 28 Days
Roſanna on Septr 5th 1775 Aged 8 Years 4 Mons 3 Days
Anne on Septr 3d 1775 Aged 4 Years 7 Mons 25
Hezekiah on Augst 30th 1775 Aged 2 Years 8 Mons

Figure 174. A tombstone depicting the tragedy that befell a family in Bloomfield, Connecticut, in an epidemic. (Courtesy Dr. Wendell C. Hall.)

the source of the heat supply. Beds were cold, and so long-handled warming pans, usually constructed of brass, were used as bed-warmers. They were filled with live coals and rubbed over the bottom sheet to heat it. When a person was ill, stone jugs filled with hot water, the forerunners of hot water bottles and heating pads, were utilized.

Mothers used pewter nursing bottles for their "dry nursing." These were heavy, and the top section unscrewed for the milk to be poured in the bottom part. The nipple was part of the pewter top section. China feeding cups were in vogue as were the hot-water chambered serving dishes. This was an attempt to keep the food as warm as possible.

Herbs were used extensively in colonial homes as seasoning in food, as air purifiers, as well as sachet to scent linens and clothes. In addition, mothers concocted many uses for medicinal herbs which became the bases of medications that are used today. An example of this was the woman in Shropshire, England, who found a remedy that cured dropsy; that herb was foxglove, from which digitalis, a valuable heart medicine, is obtained. Dr. Withering (1741–1799) discovered that this lady was curing patients with dropsy when it was associated with a heart condition. He extracted from her herb mixture the important ingredient which was digitalis.

Other than the previously mentioned religious nursing groups, there were no prepared nurses.

Nutting[12] states: "The eighteenth century saw a deterioration in nursing and hospital organization, and, naturally, the surroundings of the sick were also changed for the worse. The large airy halls, the cool springs and fountains, and the sweet green gardens of the mediaeval hospitals of France, Spain and the East now gave place to the small dark wards of the city and state institutions of the eighteenth century."

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[12] Nutting, M. A., and Dock, L.: *A History of Nursing.* New York, G. P. Putnam's Sons, 1935, I, p. 251.

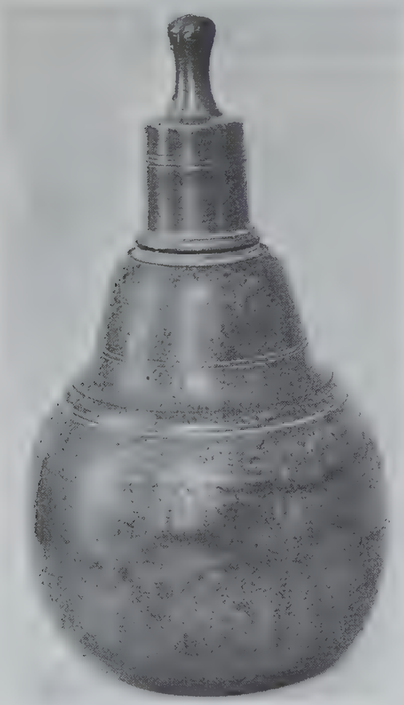

Figure 175. Pewter nursing bottle (late eighteenth century). (Courtesy Addison Gallery of American Art, Phillips Academy, Andover.)

There were *hospitals* established in this century.

1731: *Blockley Hospital* (now Philadelphia General Hospital) of Philadelphia. This hospital received the poor, sick, insane, prisoners, and orphans and was connected with a poorhouse. It was an almshouse and workhouse for the aged and infirm of the city. The care of patients was in the hands of servants, criminals, and paupers. It was of a low caliber.

1737: *Charity Hospital* of New Orleans.

In 1736, in New Orleans, a sailor, Jean Louis, died, leaving a sum of money to be used for the founding of a hospital for the care of the sick. His bequest included funds to purchase necessary equipment. The hospital was constructed in 1737 and served both as a hospital and as an asylum for the poor. After several catastrophes, the hospital was rebuilt in 1832; it had high ceilings, spacious wards, and verandas, and was placed under the aegis of the Sisters of Charity in 1834.

1751: *Pennsylvania Hospital* was founded in Philadelphia through the efforts of Dr. Thomas Bond and Benjamin Franklin, both of whom were Quakers. Its purpose was to admit only those who were acutely ill or had received an injury. Strangers as well as the residents of Philadelphia were admitted. It was not an almshouse or poorhouse but a hospital in the usual sense of the word. The seal of this institution has been that of the Good Samaritan: "Take care of him and I will repay thee."

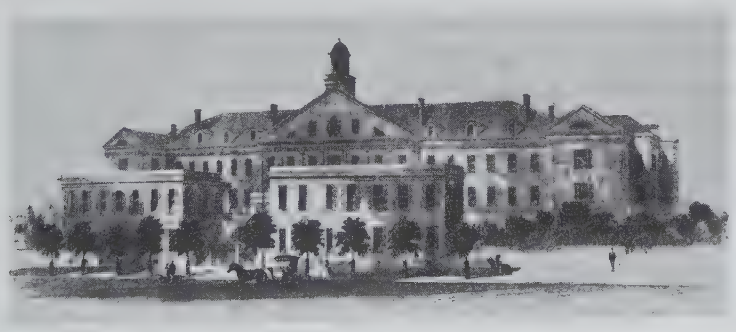

Figure 176. Charity Hospital, New Orleans, 1832.

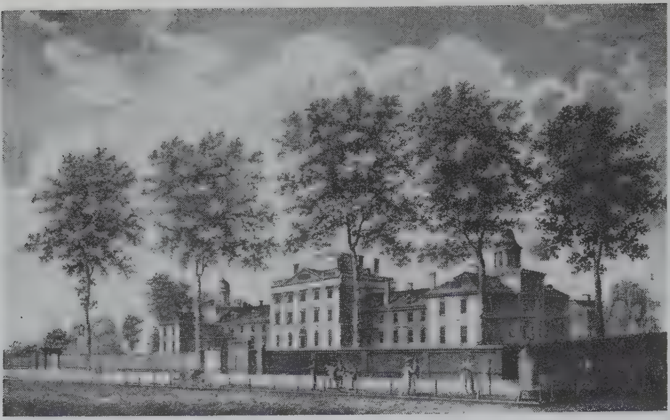

Figure 177. Southeast view of Pennsylvania Hospital, 1751.

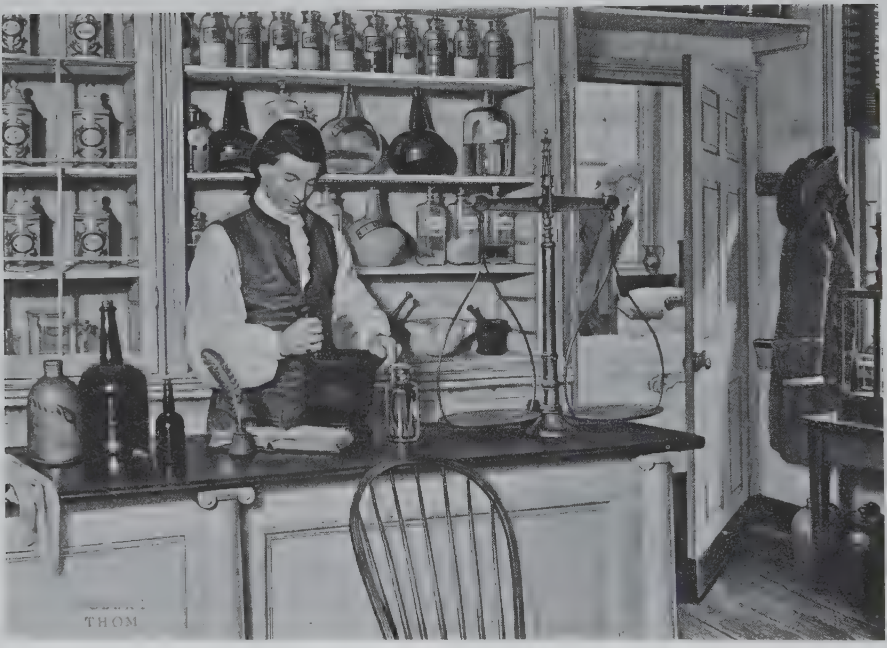

Figure 178. Colonial America's first hospital pharmacy. © 1954 by Parke, Davis & Co.

It was in Pennsylvania Hospital in 1752 that the first hospital pharmacy was established, and an apothecary was appointed to concoct the medicines.

1770: *Eastern State Hospital,* known as the "Lunatick Hospital," was opened in Williamsburg, Virginia. This was one of the first American state-owned institutions for the mentally ill. In 1770, Governor Fauquier sponsored an act "to make Provision for the support and maintenance of idiots, lunaticks, and other persons of unsound minds."

1771: *New York Hospital* came into existence due to the efforts of public-spirited citizens. In 1771, a royal charter was granted by King George III to "the society of the Hospital in the City of New York in America." It was in the New York Hospital that Dr. Valentine Seaman gave the first series of lectures to nurses in the Colonies.

1786: *The Philadelphia Dispensary* was established through the influence of Quakers.

1796: The *Boston Dispensary* was founded by a group of Boston philanthropists. It had the first dental clinic and the first lung clinic in the nation, as well as the first evening pay clinic for working people. Another unusual aspect was that it had the first food clinic in the world.

The distressing social conditions existing in the eighteenth century aroused the sympathetic efforts of many persons, including those with political influence. One such person was *John Howard* (1727–1789) who spent years investigating prisons, lazarettos, and hospitals in England and on the continent. In a forceful manner he recorded his observations, much to the consternation of the public. As bad as were the prison conditions, including the dungeon horrors, the facilities and care of the mentally ill were indescribable; then, too, the hospitals and nursing conditions were deplorable. The only praise that he recounted was for the work of the Sisters of Charity and the Beguines.

Filth, poor sanitation, and an inadequate and unappetizing diet seemed to be universal. Windows were not opened for fear of drafts nor were patients bathed for fear of getting them chilled.

Among Howard's recommendations included keeping one ward unoccupied so that patients in a ward could be removed to the vacant one while the one to which they had been assigned was cleaned. This was to be done to each ward in rotation.

Nurses of this period were housekeepers doing the scrubbing and cleaning, when it was done. They were on a low level socially; were unable to read or write; and were given to drunkenness and, consequently, to drowsiness. These women were more to be pitied than criticized. They had no desire for their job, nor did they have preparation for it, for they lacked the ability to comprehend it if an education were given to them.

That there were some women serving as nurses who had a poor educational background but were striving to give devoted service was evident from the following letter.[13]

> To the Honourable the Governor and Council
> The Humble Petition of Alice Redman one of the nurses at the hospital
>
> Humbly Sheweth, that your petitioner has been a nurse at the hospital for about a year she has been deligent and carefull in her office, which she your petitioner humbly beg for an augmentation to her pay as she is allowed two dollars a month she has at this present time sixteen men for to cook and take care off she your petitioner has since she has been a nurse had a great deal of trouble she is oblige to be up day and night with some of the patients and never has been allowed so much as a little Tea, or Coffee which she your petitioner hopes your Honours will take this petition into your consideration and your Petitioner in duty Bound will Ever Pray,
>
> Alice Redman.
>
> P.S. She your petitioner out of the two dollars p^r month is oblige to buy brooms and the soap we wash with if your honours will please to relieve your petitioner will ever be bound to pray. A. Redman.

Much progress was noted eventually due to the efforts, courage, and endeavors of John Howard.[14]

A prison with a pathetic history of torture was Newgate Prison of East Granby, Connecticut; it was the first Connecticut colonial prison. Prisoners were not segregated according to sex, type of crime, or mental condition; the mentally ill and mentally retarded shared quarters with the most vicious criminal. Screams were heard for quite a distance from the dungeons to which all inmates had to descend

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[13] Dexter, E. A.: *Career Women of America, 1776–1840.* Francestown, New Hampshire, Marshall Jones Co., 1950.

[14] *Amelia* (1751), by Henry Fielding. This novel expresses wickedness of the law courts and the evils of the English prisons of the eighteenth century. It presents a picture of being confined in debtor's jail.

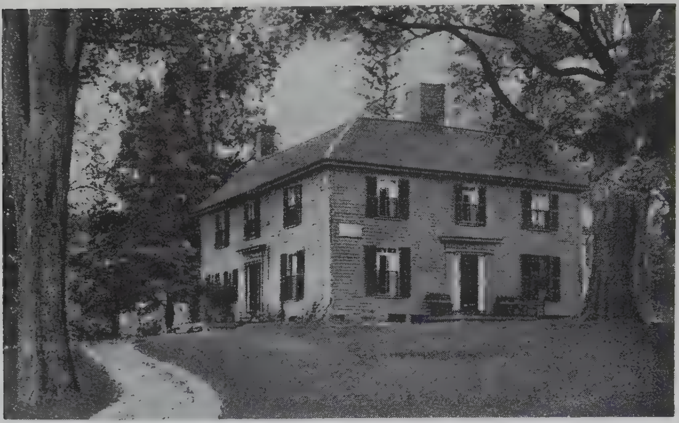

Figure 179. The Monroe tavern, used as a British hospital in Lexington in the Revolutionary War.

every night. Physical, emotional, mental disorders were prevalent and infectious diseases terminated many lives.

NURSING IN THE REVOLUTIONARY WAR

One writer says, "At the start of the *Revolutionary War* the tale of the medical department was a sorry one. There was practically no organization nor discipline. Surgical instruments were few. Drugs were few and bad; opium and quinine were scarce and ether was then unknown. Trained nurses did not exist. Blundering assistants called 'mates' were the only help the surgeons had." There were only five hospitals in New England, two in New York and two in Philadelphia. In New England after the battle of Bunker Hill several private houses in Cambridge were made into a hospital with Dr. John Warren in charge. Other hospitals were established near Boston. The nurses were mostly men with no training in nursing. "Improvised hospitals at strategic points were often only halls, churches or hastily constructed sheds. Sometimes an inn was available. Means of transportation were primitive, and long journeys from the battle front left the wounded in grave condition. . . . Despite the exertions of Dr. Benjamin Rush, one of the most distinguished physicians in the Colonies, hospitals were frightfully overcrowded and unsanitary beyond modern conception. Fever and epidemics ran almost unhindered."

In 1777 General Washington ordered that women be engaged to nurse the soldiers; and, though many were employed,

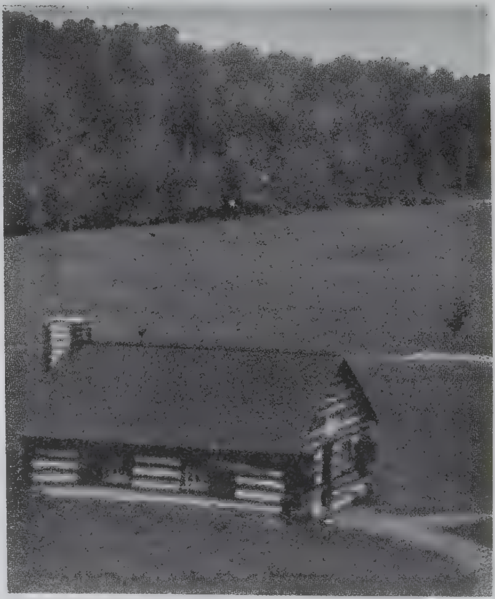

Figure 180. Log hut at Valley Forge, used as a hospital.

they apparently cooked and served meals but did little nursing. Some women followed their husbands into war and took care of them if they were wounded or ill.

At Valley Forge, in the winter of 1777, small log huts were used as hospitals (Fig. 180). Each contained two double and four single bunks made of logs, a table and a fireplace. The operating room was located in a stone schoolhouse, built by William Penn's daughter, Lucy.

Leadership in nursing in this century was conspicuous by its absence.

NURSING IN THE FRENCH COLONIES DURING THE EIGHTEENTH CENTURY

The most traumatic year in the history of the Hôtel Dieu of Quebec was 1703. In that year, a severe epidemic of smallpox attacked Quebec and eventually the whole of New France. More than 2,000 deaths occurred in Quebec. In 1710, a yellow fever epidemic then wrought havoc.

The Sisters of the Hôtel Dieu labored tirelessly during both epidemics. Several of the sisters died at their heroic tasks of caring for the afflicted.

A ship docking in the harbor in 1740 brought 241 plague-stricken patients to the Hôtel Dieu. There was a remarkably low death rate, which indicates skilled nursing care had been given to these patients.

In 1755, another catastrophe confronted the sisters when the Hôtel Dieu was razed by fire. The Bishop of Quebec offered his home and volunteered to be the first orderly.

Two years later the sisters resumed their care of the sick in the newly rebuilt hospital but had a new challenge. The year was 1759, and the Augustinian Sisters of the Hôtel Dieu were ordered to go to the General Hospital which was outside of the city. During the military encounter, the wounded from the battles of the Plains of Abraham and Sainte-Foye were nursed devotedly by both the Augustinian and the Ursuline Sisters. When Quebec fell to the British, the majority of the sisters returned to their hospital. They received kind treatment from the new regime.

A description of the two hospitals in Quebec as well as the type of women who joined the nursing orders was written in 1769 by Francis Brooke in *The History of Emily Montague:*[15]

> The Hotel Dieu is very pleasantly situated with a view of the two rivers and the entrance of the port; the house is cheerful, airy and agreeable; the habit of the nuns extremely becoming, a circumstance a handsome woman ought by no means to overlook; 'tis white with a black gauze veil . . . the nuns of this house are sprightly and have a look of health.
>
> The General Hospital, situated about a mile out of town, is on the borders of the river St. Charles. The order and habit are the same with the Hotel Dieu, except that to the habit is added the cross, generally worn in Europe by canonesses only; a distinction procured for them by their founder St. Vallier, the second bishop of Quebec. The house is, without, a very noble building; and neatness, elegance and propriety reign within. The nuns, who are all of the noblesse, are many of them handsome, and all genteel, lively and well bred; they have an air of the world, their conversation is easy, spirited and polite; with them you almost forget the recluse in the woman of condition.

The nursing sisterhoods in Canada came from France to Montreal and Quebec in the seventeenth century. By the eighteenth century, the members of the orders were Canadians.

The *St. Joseph Hospitallers of the Hôtel Dieu of Montreal* had a rigorous time during the greater part of their first hundred years there. They were beset by problems: of lack of money; supplies' not arriving from France; of fire's destroying the hospital; of temporarily using a portion of a home for the aged; of living through the perilous days of the "cold war" while the Indians armed with tomahawks were preparing to attack the English; of struggling to care for an extra 500 patients during a smallpox epidemic; of surviving the effects of another destruction of their hospital by fire; and, of coping with a malignant fever epidemic brought by one of the king's ships.

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[15] Gibbon, John M., and Mathewson, Mary S.: *Three Centuries of Canadian Nursing,* Toronto, The Macmillan Co., 1947, p. 53.

By 1735, the Community resumed activities in the newly constructed Hôtel Dieu. Like so many building projects even in the present, when the building was completed, it was not adequate to house the sisters. The grant needed to make up the deficiency of funds came from the King and several benefactors. Thus the hospital requirements were realized.

An earthquake, a crop failure, a fever epidemic, another crop failure due to destruction by caterpillars bedeviled the poor sisters before calm followed these emotional and social storms.

In 1738, *Madame d'Youville,* a widow of means who had been responsible for many philanthropic endeavors, organized a group of women of similar interests. These women became the Soeurs Grises or *Grey Nuns.* Their order was similar to the Order of Visitation founded by St. Francis de Sales. The sisters took care of the sick both in the hospitals and in their homes. They accepted women of all classes of society for membership in this order. The amazingly modern concept of making this a "hospital college" under the aegis of a teaching order was abandoned.

The Grey Nuns differed from the two other nursing orders of sisters in that this new order was not cloistered and included in its program the visitation of the sick in their homes, which was district nursing (visites à domicile). The Community of the Soeurs Grises, under the title of Sisters of Charity of the General Hospital of Montreal, received from Louis XV a charter to operate their hospital. They wore a gray habit with a silver crucifix on the breast.

Mother d'Youville was a capable manager and devised many ways of raising money which was desperately needed for hospital construction, renovation, and debts in general.

When English prisoners who had been sick or wounded were convalescing, Mother d'Youville put them to work at their trades and in this way utilized a modern concept of rehabilitation. She sheltered the prisoners from the Indians in the chapel.

When the English captured New France, the various orders of sisters received protection, were not disturbed or prevented from continuing their work, and were praised for the care given to all soldiers.

In Canada, a home for abandoned children was established and given the name, *La Crèche d'Youville.* It is still used as a center for the placement of abandoned children with foster parents.

In Acadia (Novia Scotia)[16] between 1629–1630 a tiny settlement prospered amid trials and tribulations and came to be known as Port Royal. From its earliest beginnings, it had a type of infirmary for the sick under the supervision of the *Brothers Hospitallers of St. John of God.* Gradually, this developed into a hospital.

Another more pretentious hospital was constructed at Louisbourg in Cape Breton. Five members of the Brothers Hospitallers of St. John of God were sent to staff this institution; two male nurses, two surgeons, and an apothecary were assigned also.

The British colonized Nova Scotia, and a hospital was constructed for the citizens at Halifax. The matron of this hospital, Sarah Dunlop, has been reported to have worked without pay. This hospital became an almshouse for the poor in 1766.

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[16] Longfellow, Henry Wadsworth: *Evangeline*—a narrative romance about Nova Scotia farmers deported from Acadia during the French and Indian Wars.

The English had hospital ships which were described as being utilized when General Howe was moving his army, including sick and convalescing soldiers.

The accomplishments of nursing in eighteenth-century Canada were remarkable. Men and women of nobility who gave superior care in the face of insurmountable odds were recruited.

In summary, the eighteenth century has revealed an attempt at achieving independence on the part of many individuals; at conquering pestilential contagion and marked loss of lives; at improving the status of society while laboring under inadequate means of transportation and communication.

Achievements were notable in conquering certain diseases; in providing leadership in medical practice and medical education; in devising diagnostic equipment; in developing the beginnings of humane treatment of the mentally ill; in expanding the bases of the sciences of chemistry and physics; in surveying the superior preparation and nursing care given by the religious orders in Canada; in the construction of hospitals and medical schools.

The areas needing strengthening were social legislation for public and industrial health, and improvement in medical care and treatment; and, in the newly formed United States, the recruitment of persons of a more acceptable background for nursing and provision of an educational preparation for them.

Aids to Enrich an Understanding of This Period

I. Prepare "A roll call of eighteenth-century chemists, or biologists, or physicians, or nursing orders," tracing their progress and accomplishments.
II. Search through data on works of art to procure information concerning the artists and their famous works which depict medical, social, or historical references to occurrences in this era.
III. List some brief entries that might have been written in the diary of one of the soldiers in the American Revolution and/or the French Revolution concerning the diagnosis and care of injuries incurred in battle.
IV. Prepare an account of an interview with inmates of some of the early hospitals in Canada and the United States, or in the prisons; document your findings by research.

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IX

The Early Nineteenth Century

A survey of the nineteenth century reveals a century of expansion politically, geographically, economically, medically, and socially in a century of inventions, discoveries, and creativity in every aspect of human endeavor. There were revolts, wars, and emotional conflicts even within the newly formed states. It was inevitable that the basic beliefs and principles woven into the fabric of the Constitution would be questioned by the preservation of slavery on democratic soil.

There was upheaval in the agricultural and industrial areas due to the application of scientific knowledge to the techniques of production. Power-driven machinery replaced handcraft and human hands; thus, it created mass production, but it also created new problems. The *Industrial Revolution* brought about conditions of poverty, overcrowding, disease, and many other social problems.

Under the domestic system of manufacture, a man's work was done at home in a healthy country setting with the family offering assistance. His work might have included carding, spinning, weaving, dyeing, or many other skills. The craftsman owned his own tools, purchased whatever raw materials with which he worked, and was in essence a small businessman.

The next step in the evolution of industrial productivity in England and gradually elsewhere was a system of home industry. Under this system, a businessman with a greater capital outlay could purchase larger quantities of raw materials at lower prices. Skilled workers at home produced the finished product for the businessman who had two concerns: purchasing raw materials and selling the manufactured fabric. The manufacturer was the man who worked in his home, his entire family contributing to his product or service.

In England, toward the end of the eighteenth century, when the series of inventions revolutionized production, machinery replaced handcraft and a factory instead of the home became the work center. The manufacturer became a hired hand; his product was skilled labor. He was now dependent for lodging whereas he once had his own cottage usually in a rural setting. Factories were noisy and dirty, and the workers had to live close to their work huddled together in poor, sunless homes. Although ultimately the inventions improved society, they caused a change for the worse in living conditions and brought about lack of work for others. This resulted in poverty, that social disease that has been the parent of physical disease.

The whole household worked in England because with salaries low, mothers and even children were forced to work. *Child slavery* evolved. Orphans were apprenticed to the overseers of the factories, and these children were treated cruelly. For wages, they were given poor food and lodged in an attic or cellar. The same beds were used by two sets of children, one during the day and one at night. The working day was a long one, fifteen to sixteen hours a day, and this even for little children from the age of five. The indignation against these atrocities to children was expressed by Mrs. Browning in the poem, "The Cry of the Children."

Alas, alas, the children! They are seeking
  Death in life, as best to have.
They are binding up their hearts away from breaking,
  With a cerement from the grave.
Go out, children, from the mine and from the city;
  Sing out, children, as the little thrushes do;
Pluck your handfuls of the meadow-cowslips pretty;
  Laugh aloud, to feel your fingers let them through.
But they answer, "Are your cowslips of the meadows
  Like our weeds anear the mine?
Leave us quiet in the dark of the coal-shadows,
  From your pleasures fair and fine.

"For oh!" say the children, "we are weary,
  And we cannot run or leap:
If we cared for any meadows, it were merely
  To drop down in them, and sleep.
Our knees tremble sorely in the stooping;
  We fall upon our faces, trying to go;
And, underneath our heavy eyelids drooping,
  The reddest flower would look as pale as snow;
For all day we drag our burden tiring,
  Through the coal-dark, underground;
Or all day we drive the wheels of iron
  In the factories, round and round."

Within the factories, there was little ventilation and no sunlight; this coupled with poor housing weakened their resistance, and many infectious diseases took a heavy toll of life. Trouble was brewing, and riots broke out; unions began to develop.

Philanthropists toiled to achieve the passage of laws to protect the workers and alleviate the situation. In 1819, an act was passed that required that no child under three years of age be employed; that twelve hours a day be the maximum for those under sixteen years of age; that time for meals be allowed; and that walls and ceilings be whitewashed at least twice a year. The law was not enforced.

This was followed in 1833 by Parliament's adopting a bill prohibiting night labor to those under eighteen years of age; children from nine to thirteen not to work more than forty-eight hours a week; those from thirteen to eighteen not to have more than sixty-eight hours a week; and children under nine must not be employed. The conscience of the public had been awakened at last. By 1847, a ten hour workday became a reality for women and young persons, while men continued for twelve hours or more a day.

Other evils including bad housing, poor sanitation, and lack of formal education were noted. Women and children worked in mines as well as in factories.

There was a growing awareness that health was the responsibility of the public and that the state had a definite duty to protect the public by wise legislation.

DEVELOPMENTS IN MEDICAL, BIOLOGICAL AND PHYSICAL SCIENCES

Marked advances were made in the field of medicine in this century.

Physiology

It is to *René T. H. Laënnec* (1781–1826) that we owe the contribution of a *stethoscope.* After receiving a good classical education, Laënnec was appointed a military surgeon at the age of fifteen and became apprenticed to his uncle who was a professor of medicine at Nantes.

Tuberculosis, also called the White Plague, was an everpresent affliction in this century, and the incidence of this disease was very high. It has been stated that one third of all the patients in Paris hospitals had tuberculosis. It seemed to consume a person and, in fact, was called "consumption."

In treating patients with this condition, Laënnec had resorted to palpation and percussion but was dissatisfied with the ineffectual method of listening to chest and heart sounds. It was the custom in this period for the physician to place his ear over the patient's chest in order to hear these sounds. Many physicians were reluctant to use this method because of lack of patient's cleanliness; of the coughing of a patient; of the modesty of the patient; of obesity of the patient which muffled the sounds.

In 1816 while walking near the Louvre, he observed children on one end of some wooden beams tapping out messages to children who were listening intently at the other end. Immediately, Laënnec had an inspiration; he returned to the hospital, rolled some paper into a tube, placed one end over the chest of an obese patient and rested his ear against the other end. He heard heart sounds more clearly than ever before.

This chest examiner he called a stethoscope. At first, it consisted of the rolled paper tied with string and then he devised a cylinder made of light wood—about twelve inches long—that could unscrew into two parts. (It was Dr. Cammann of New York who developed the binaural stethoscope.)

In 1819, Laënnec published *A Treatise on the Diseases of the Chest and on Mediate Auscultation.*

Laënnec believed that tuberculosis was contagious; that it was curable; that the disease might be quiescent without manifest symptoms and then later blossom into an acute phase. Laënnec felt strongly that scrofula, called "King's Evil," was tuberculosis of the lymph nodes of the neck. This form of the disease as well as several other varieties occurred at a time in history when milk was not pasteurized.

René Laënnec died of tuberculosis but he had had a family history of the disease. When he was five years old, his mother died of tuberculosis; later on, his uncle with whom he lived and still later, his brother with whom he shared a room succumbed to the disease.

The cause and cure of this disease needed to be discovered, but Laënnec contributed to the advancement of medicine and thereby benefited society with his stethoscope.

William Beaumont (1785–1853) was born the son of a prosperous farmer in Lebanon, Connecticut. He attended grade school before becoming interested in traveling. He went to Champlain, New York, and took a position as a grade school teacher. In his free time, he read the medical books of the local doctor and became interested in pursuing a medical career. He journeyed to Vermont and studied under the tutelage of a doctor. Then, in 1812, he secured a license to practice. He

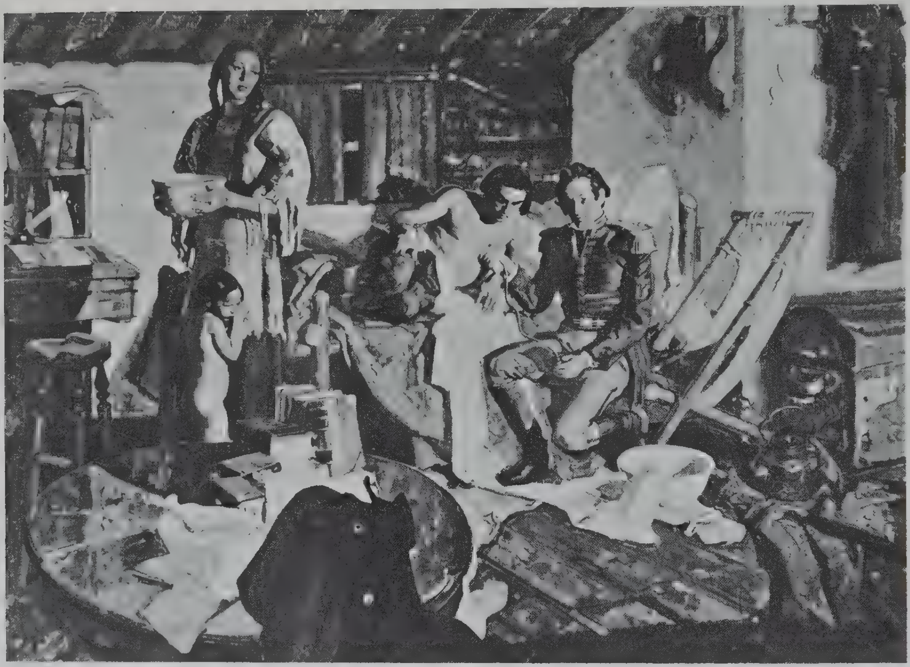

Figure 181. Dr. Beaumont studying the digestive processes of the stomach through the permanent gastric fistula of Alexis St. Martin, in Fort Mackinac, Michigan, 1825. (Courtesy of Wyeth Laboratories.)

enlisted in the United States Army as a surgeon's mate and later was assigned to a lonely outpost on Mackinac Island. Here he met the man who was to become Beaumont's physiological laboratory.

Alexis St. Martin was a young trapper who had been wounded accidentally by a gunshot blast. This injury left an opening through which Dr. Beaumont studied the reactions of the stomach to various types of food, liquid, and emotions. The wound never healed.

In his study of this most unusual affliction, Army Surgeon Beaumont shed much light on one of nature's most baffling mysteries, the process of digestion. In 1833, he wrote *Experiments and Observations on the Gastric Juice and the Physiology of Digestion.*

Claude Bernard (1813–1878) was said to be responsible for introducing the use of the scientific method into the field of medicine. He developed unusual ability in preparing specimens used by Magendie in his demonstrations. Bernard manifested rare skill in the use of the experimental method of scientific investigation.

The fruits of his labors included: studies of digestion, concentrating on a study of the breakdown of sugar in the body as well as the part played by pancreatic juice; explanation of the role of glycogen in the liver; demonstration of the vasomotor mechanism in governing bodily activities, with the conclusion that irritation of the vagus nerve could cause an increase in sugar production, resulting in sugar excreted in the urine (glycosuria); the discovery, through studies of carbon monoxide poisoning and experimentation, that carbon monoxide could displace oxygen in the red blood cells; the proof through experimentation that curare destroyed the contact between nerves and muscles. He found that the muscles reacted to artificial stimuli.

Bernard's efforts were published in 1865 in his classic work, *An Introduction to the Study of Experimental Medicine.* As a result of his labors, the fields of physiology and physiological chemistry have been enriched.

In 1865 an Augustinian monk, *Abbot Gregor Johann Mendel,* of Brunn, Moravia, announced the results of his profound research in a publication that went unnoticed for almost half a century. *Mendel's law* of dominant and recessive characteristics has had applications in biology, eugenics, and in the understanding of heredity, even the hereditary aspects of some diseases.

Herman von Helmholtz (1821–1894) had a tremendous desire to become a physicist or mathematician, but financial problems prevented his choice of career. He was advised that he could receive an education in medicine if he would give some years of service in the Prussian army in return for this opportunity. He utilized his background in physics and mathematics and made practical applications in the field of medicine, especially in the fields of physical optics and acoustics.

Among his achievements were the invention of the *ophthalmoscope* and the *ophthalmometer* and an understanding of the transmission of sound through the middle ear, which he described, to the brain. His fertile brain presented a delineation of the law of conservation of energy as well as fundamental principles relating to the over-all field of dynamics—hydro, thermo and electrodynamics.

He was outstanding in the fields of teaching and research, a practitioner of medicine as well as a physicist.

Anesthesia

Pain has been one of the greatest afflictions from earliest times. There were many attempts to find soporific potions to deaden pain. Earlier groups had resorted to the use of wine, opium, mandrake, and many other substances which were more merciful than the cruel methods of either rendering the patient unconscious or by obtaining physically strong individuals who restrained the patient by force. The world desired something to dull the senses and permit the blissful state of unconsciousness needed so desparately by both surgeon and patient.

The answer came in the discovery of *anesthesia,* one of America's greatest gifts to the world.

In 1766, Joseph Priestley had isolated nitrous oxide. A physician from Georgia, *Crawford W. Long* (1815–1878) used ether for surgical operations and in obstetrics. In 1842, some of his young medical friends had inhaled ether for a bit of fun and amusement. Long joined also as a participant in this "ether frolic." He realized that ether gave a person more than a feeling of euphoria and that its use might be tried for surgical purposes. This he did successfully but did not report his success until 1849.

A dentist of Hartford, Connecticut, *Horace Wells* (1815–1848), administered nitrous oxide while extracting teeth, and it was a succesful venture. He, too, had witnessed a public demonstration of "laughing gas" which was attended largely by young men in the field of medicine as a form of amusement. Publicity for these social evenings sounded as follows:

> A GRAND EXHIBITION of the effects produced by inhaling NITROUS OXIDE, EXHILARATING or LAUGHING GAS! will be given at UNION HALL, THIS (Tuesday) EVENING Dec. 10th, 1844.
>
> FORTY GALLONS OF GAS will be prepared and administered to all in the audience who desire to inhale it.
>
> TWELVE YOUNG MEN have volunteered to inhale the GAS, to commence the entertainment.
>
> EIGHT STRONG MEN are engaged to occupy the front seats, to protect those under the influence of the Gas from injuring themselves or others. This course is adopted that no apprehension of danger may be entertained. Probably no one will attempt to fight.

THE EFFECT of the GAS is to make those who inhale it either Laugh, Sing, Dance, Speak or Fight &c., &c., according to the leading trait of their character. They seem to retain consciousness enough not to say or do that which they would have occasion to regret.

N.B. The Gas will be administered only to gentlemen of the first respectability. The object is to make the entertainment in every respect a genteel affair.

Entertainment to commence at 7 o'clock. Tickets 25 cents—for sale at the principal Bookstores and at the Door.

During one of these entertainments, a friend of Dr. Wells was a volunteer, inhaling the gas, relaxing, and then needing some restraint which he obtained. During the course of the evening, Wells noted that his friend's leg was bleeding while his friend suffered no pain from the injury. Wells pondered this episode of the absence of pain while his friend had sustained a serious injury. He then had his assistant extract one of Wells's teeth first using nitrous oxide inhalation. He was satisfied and elated with this painless experiment.

Full of enthusiasm over his personal experience, Dr. Wells obtained permission to give a clinical demonstration before a class at Harvard Medical School. Unfortunately, the patient was not anesthetized completely and screamed during the operation. The medical students jeered and shouted humbug; the demonstration was considered totally unsuccessful; and Wells was humiliated.

A dentist in Massachusetts, *William T. G. Morton* (1819–1868), was present at the unfortunate demonstration of his friend, Dr. Wells, and felt that something else was needed which would be more reliable.

Sulfuric ether had been known and used. After experimenting with ether upon himself, in 1846 Dr. Morton administered ether to a patient of the famous surgeon, John Collins Warren, the professor of anatomy and operative surgery at Harvard Medical School and chief of surgical service at Massachusetts General Hospital. When the patient became unconscious, Dr. Warren, turning to the surgical staff, said, "Gentlemen, this is no humbug." It was administered in the operating room amphitheater, called the Ether Dome of the Massachusetts General Hospital. The patient was placed in the operating chair which was upholstered in red plush with an adjustable back. This operating chair is still part of the background of the famous Ether Dome of "M.G.H."

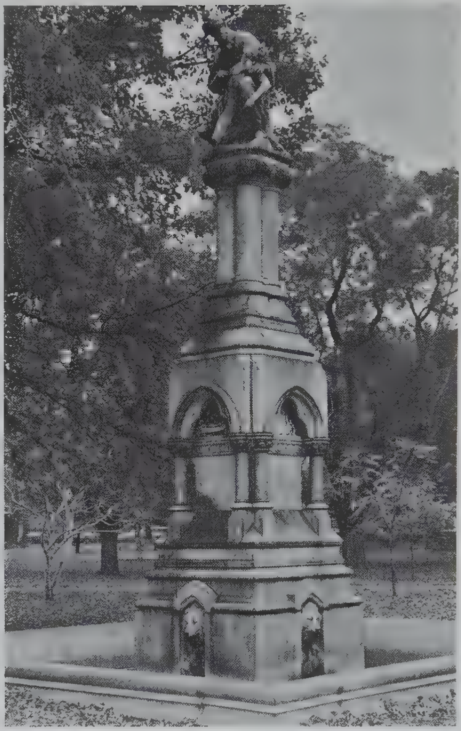

Figure 182. Ether monument, designed by J. Q. A. Ward and donated to the city of Boston in 1868 by Thomas Lee.

Surgical operations could now be performed which would have been impossible without anesthesia. The terms anesthesia, anesthetic, and anesthetist are supposed to have been mentioned by Oliver Wendell Holmes.

Obstetrics and Gynecology

The world owes a tremendous debt of gratitude to *Ignaz Semmelweis* (1818–1865), a well educated gentleman with an able mind, who was an independent thinker, an earnest careful investigator, and an ardent reformer in the interest of improving medical practice and thereby saving lives. He possessed earned degrees of doctor of medicine, master of midwifery, and doctor of surgery.

He received an appointment as assistant director of the Obstetric Clinic at the Lying-in Hospital in Vienna. He was appalled at the high maternal mortality rate due to *puerperal sepsis* or *childbed fever*. People dreaded going to hospitals in this century because the chances of survival were poor.

He began to use his powers of observation and to analyze patient care. He noted a marked difference in the maternal mortality rate between two of the clinics. In the one in which the midwives practiced, the incidence of childbed fever as well as the mortality rate was decidedly lower than in the other clinic in which the medical students practiced. The transfer of infection, Semmelweis determined, was due to the filthy habits of medical students who dissected bodies on the autopsy table and then went directly either to deliver a baby or to examine a prenatal or postpartem case. He confronted medical students with his observations and indicted them for transferring infection by not washing their hands. He was derided by his colleagues who protested explosively against his requirements.

He demanded that medical students wash their hands with soap and water, then in chlorinated lime, and finally scrub their hands with fine sand. The drop in the death rate of maternity patients was astounding. One further fact was suspected by Semmelweis: that doctors carry infections from one patient to another. Thus, it was essential to wash hands after treating every patient. In 1861, he published an account of his valuable research efforts in *The Cause, Concept, and Prophylaxis of Childbed Fever.*

His theory was revolutionary and was not accepted by his contemporaries. Their treatment of him and his work were responsible for his eventual mental illness. He died in 1865 of a wound infection which caused blood poisoning, the disease he fought to eliminate. Mothers had a greater opportunity to survive the delivery and postpartem convalescence thanks to Dr. Semmelweis.

Another leader in the fight to eliminate childbed fever was *Oliver Wendell Holmes* (1809–1894), that brilliant and gifted gentleman of American literature. Holmes graduated from Harvard in 1829 with the famous class, "The Boys,"—whose reunions were enhanced by his poetic contributions. After he graduated, he abandoned the study of law for that of medicine. He studied in a private school under an outstanding medical practitioner for two years, meantime taking courses at Harvard Medical School and doing practical work at the Massachusetts General Hospital.

It was the custom of the period for the student of medicine who was financially able to go abroad to enrich his background. Holmes spent a profitable period studying in Paris before settling down in New England.

In 1842, he wrote an essay on homeopathy[1] which was a forceful exposition of the fallacies of that form of healing. In

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[1] The nineteenth century, which witnessed such phenomenal progress in medicine also observed several unusual developments. One of these was the founding of *homeopathy* by *Samuel Hahnemann* (1755–1843) in the early years of this period. His theories were that a medication that produces symptoms similar to the ones causing the disease could cure the patient—"like cures like"; that the more medicines are diluted the more potent they become (the lack of logic behind this statement is obvious); that all nervous diseases cause or are caused by an itch. He inveighed against emetics, purging, cupping, blood letting, and blistering. He had many opponents but many supporters even in the United States. Homeopathic medical schools and homeopathic hospitals were opened. Homeopathy has practically disappeared now.

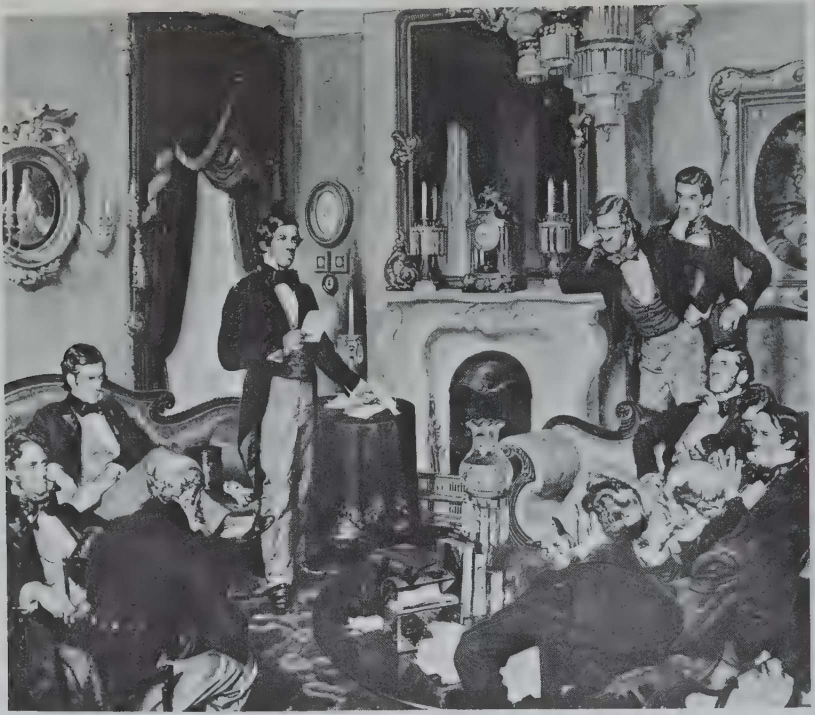

Figure 183. Dr. Oliver Wendell Holmes reading his celebrated essay, "The Contagiousness of Puerperal Fever" before the Boston Society for Medical Improvement in 1843. (Courtesy of Wyeth Laboratories.)

1843, he composed a brilliant essay, *The Contagiousness of Puerperal Fever,* that was a medical classic. It had been published five years before the work of Semmelweis appeared. His views were attacked bitterly by his medical colleagues, but, like Semmelweis, his opinions and theoretical concepts were correct. In 1855, he republished this paper adding an introduction in criticism of these unjust remarks. Many years later he wrote a letter to a friend with this comment: "I do know that others had cried out with all their might against the terrible evil before I did, and I give them full credit for it. But, I think I shrieked my warning louder and longer than any of them and I am pleased to remember that I took my ground on the existing evidence before the little army of microbes was marched up to support my position."

As may be noted, Pasteur's work (1879) showing the connection between streptococci and the disease of puerperal fever had received wide publicity before Holmes's foregoing letter had been written.

The year 1847 witnessed Holmes's appointment as professor of anatomy at Harvard Medical School; he was dean of the school from 1847–1853 and continued as professor until his retirement in 1882.

Oliver Wendell Holmes, the popular teacher, the superb wit of American literature, used to advantage his logical reasoning, his legal background, his facile pen, and his witty, forthright manner in analyzing the defects of medical, surgical, and obstetrical care; in stressing the need for cleanliness to prevent spread of infection; in emphasizing the use of the case history method of studying patient care; and in fearlessly presenting his views.

Ephraim McDowell (1771–1830) was raised in Kentucky and, at the age of nineteen, went to Virginia to study medicine under the guidance of a physician, then to

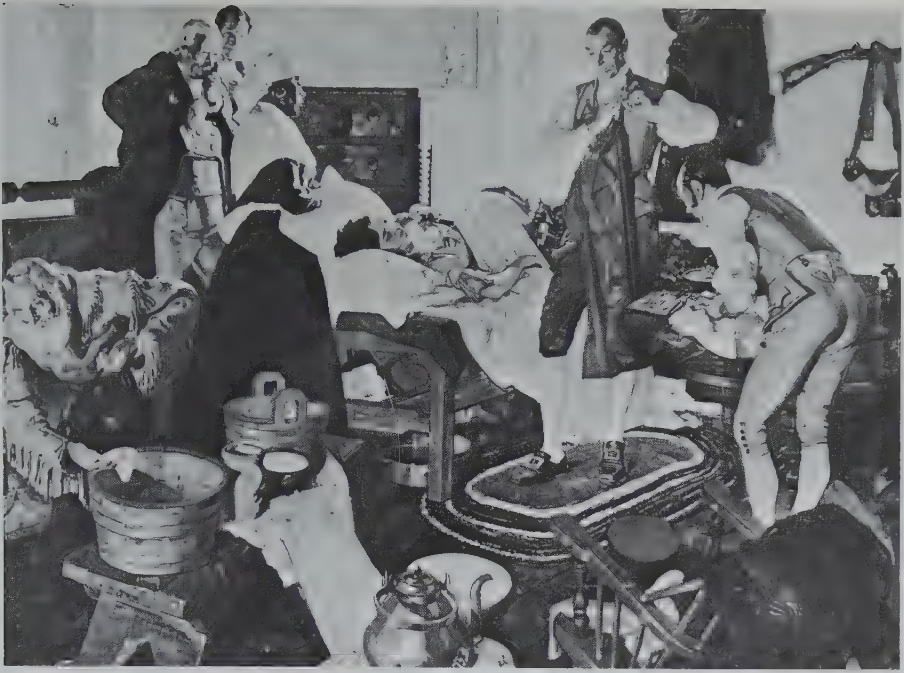

Figure 184. Dr. Ephraim McDowell about to perform the first successful ovariotomy on Jane Todd Crawford, Danville, Kentucky, 1809. (Courtesy of Wyeth Laboratories.)

Edinburgh for two years whence he returned to Kentucky.

In 1809, without benefit of anesthesia, he removed successfully an ovarian tumor weighing about twenty-two pounds. He performed several other ovariotomies and was referred to as the "Father of Ovariotomy."

James Marion Sims (1813–1883), the pioneer in developing the clinical specialty of *gynecology,* grew up in South Carolina. His interest in medicine led to his studying the subject in a doctor's office; enrolling for some courses at the Medical College at Charleston; and, finally, graduating from Jefferson Medical College in Philadelphia in 1835.

Sims engaged in the practice of surgery. He constructed a small hospital which was attached to his home and there trained young men in medicine and surgery.

His major contributions represent the surgical intervention of conditions of women; the devising of new examinations of patients and new instruments such as the use of a pewter spoon as a vaginal speculum; and the planning of special hospitals to care for diseases and surgical procedures of women.

Ultimately, much praise was bestowed upon Sims. He became president of the American Medical Association and honorary president of the International Medical Congress. He has earned the praise of women for developing the specialty of gynecology to relieve their ills, as well as establishing gynecologic hospitals where they could receive proper care. Nurses are reminded of him whenever they use a Sims speculum and place a patient in knee-chest—Sims's position.

PROGRESS IN NURSING AND SOCIAL SCIENCE

With the dawn of the nineteenth century, the actual care of the sick was the responsibility of mothers. Tender, loving care was given to friends as well as family. Every bride purchased or received a cookbook that in addition to rules and recipes to develop culinary skills always had a section on first aid and the care of the sick. Perusal of one[2] gives a picture of the rules for prevention of illness in the Connecticut Valley in 1805.

1. Avoid as much as possible living near a graveyard.
2. Keep the feet from wet, and the head well defended when in bed.
3. Avoid too plentiful meals.
4. Go not abroad without your breakfast.
5. Shun the night air as you would the Plague.
6. Tender people should have those much about them, sound, sweet and healthy.

When one became ill, there were instructions such as:

> To break up a fresh cold. Nothing is better than a glass of hot flip on going to bed. Put the poker in the fire to heat. Mix some ginger and molasses in a beer mug. Pour on some sour cider. Plunge in the red hot poker and stir it up till it foams well. This is a very agreeable cure. Warm the bed hot with the warming-pan and put in some hot bricks. A fine sweat will carry off the cold.
>
> A slice of salt pork spread with pepper and bound on with a strip of red flannel will cure a sore throat. Or, in a pinch, a stocking taken warm from the foot and bound about the throat is efficacious.

If the cold persisted and the lower respiratory tract was involved, there was this type of remedy awaiting trial:

> For a sudden attack of Quinsy or Croup, or a cold that is tight on the lungs, bathe the neck with bear's grease and pour it down the throat. Goose grease or any kind of oily grease is as good as bear's grease. Onions stewed in molasses are loosening. Put draughts of wilted horseradish leaves on the feet. A drop or two of skunk's oil or hen's oil on a lump of sugar will loosen up a cold.

This seems to be the period when lubrication of the "bronchial tubes" and the entire respiratory tract was advocated; when the heart of a baked onion placed in the ear drew out the "trouble" or "humour." The fact that it caused the ear drum or tympanic membrane to shatter was not considered, if understood at all. It was difficult to prevent deafness in this era.

The major care of the sick was at home with home remedies applied. If they were unsuccessful, the local doctor was called. Many herb medicines made at home were basic preparations, and many treatments such as poultices similar to the one mentioned above, which was propounded of "onions stewed in molasses," were resorted to frequently. Mustard footbaths seemed to be considered good for everything.

The medicines that were not concocted at home were procurable from the patent medicine man as he travelled from town to town; or obtainable as proprietary preparations in the apothecary shops. Burdick's Blood Bitters, Ayer's Cherry Pectoral, and Lydia Pinkham's Vegetable Compound were popular examples of the latter. The patent medicine peddlers sold such things as Snake Oil and Kickapoo Extract to gullible buyers, then they travelled along out of town.

Most families kept sick members at home. The well known picture of the "Doctor" presents a sickroom vigil with the members of the family waiting for the crisis to be reached and passed. There were no miracle drugs, complicated treatments, or any nurses in this picture. Pneumonia was one of the most feared of diseases.

Providing an adequate or as well balanced a diet as possible was difficult. Appert's[3] work in canning in 1810 helped to add variety to the diet because now food could be preserved. Appert felt that heat applied to food, sealed in a container in the absence of air, prevented food from spoiling. He was aware of the necessity of

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[2] *The Documtur Housewife*—The Fruit of Experience freshly gathered from Elderly Lips, and preserved in print. A Guide to Domestic Cookery as it is practiced in the Connecticut Valley, 1805, pp. 1–3.

[3] Appert, M.: *Art of Preserving All Kinds of Animal and Vegetable Substances.* London, Black, Perry and Kingsbury, 1811.

Figure 185. The doctor. (Courtesy of Wyeth Laboratories.)

obtaining a proper seal. In America in 1819, the first canning establishment using Appert's technique was set up in Boston. Outbreaks of disease due to food spoilage occurred occasionally.

In 1853, Borden perfected the process for manufacturing condensed milk which was used immediately in feeding babies and was responsible for saving many of their lives.

The steam pressure autoclave was utilized from 1874, and the new science of bacteriology was applied to the food preservation industry. Refrigerators were unheard of, but icechests or iceboxes were in vogue. Large chunks of ice were placed in these boxes. The ice melted, and, consequently, food spoiled because of this inefficient method.

Proud mothers brought newborn babies to the local grocery shop to be weighed on the same scales that were used for weighing meat and produce.

Keeping a sickroom warm and free from smoke from wood-burning stoves or fireplaces was a difficult problem. Furnaces with coal replacing wood as a source of fuel were available from around 1850.

The *sanitary aspects* of living needed scrutiny. Outdoor toilet facilities (privies) were used commonly. Gradually, these were replaced by an indoor flush toilet by those people who could afford this improvement. Indoor plumbing was slow in reentering the historical picture. Water was brought into homes through a water main system composed chiefly of wooden logs, the center of which had been removed. Eventually, cast iron replaced the wooden pipes. Many families set barrels out in the yard to catch rain water. They realized the value of conservation of natural resources. In outlying areas, wells provided the water for the household. All water supplies served as a rich potential source for the transmission of infection. The quality of the water needed improving because pollution came in contact with the water

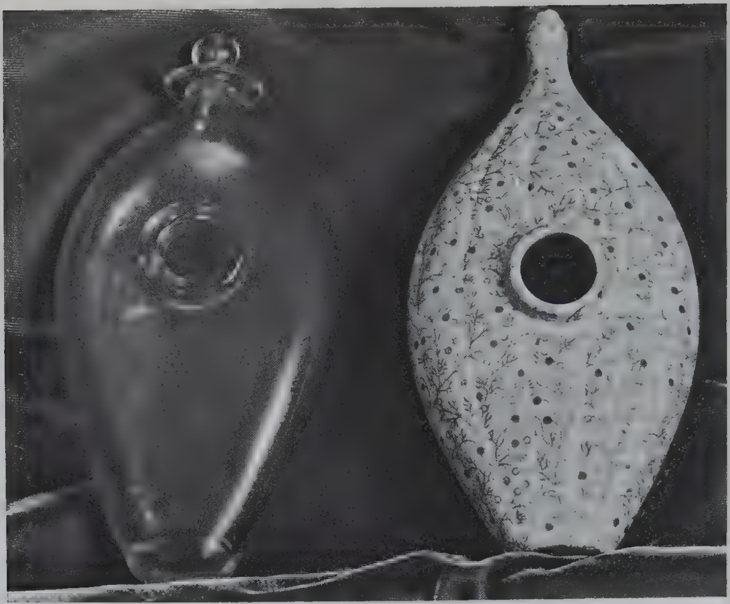

Figure 186. Nursing bottles used during the late eighteenth and early nineteenth centuries. One is of blown glass with a glass nipple; the other is of porcelain which probably matched the family's china. (From author's collection.)

supply and thereby caused contamination.

The removal of waste material, sewage, was another serious problem. Community water supplies to assist in the removal and disposal of sewage was slow to evolve. It was solved partially by draining this water through a system of sewerage pipes. In 1829, a slow sand filtration system to remove the major source of pollution was constructed in London. Filtration systems made an appearance in time.

Epidemics of cholera, yellow fever, smallpox, diphtheria, scarlet fever, dysentery, typhus, and typhoid were devastating to the people of this century. Contaminated water played its role in the transmission of disease as did food, utensils, and persons who were disease carriers.

An early public health reformer in this period was *Lemuel Shattuck* (1793–1859), a former teacher, who was engaged in the book selling business. In 1842, he was instrumental in achieving the passage of a law in Massachusetts which resulted in statewide registration of vital statistics.

In 1845, he compiled and published a *Census of Boston* which encouraged and stimulated accurate reporting of statistics in the United States. Shattuck's Census presented the shocking facts of a high mortality rate with an unbelievably high infant and maternal mortality rate.

His crowning achievement came in 1850 when the results of his efforts were published by the Massachusetts Sanitary Commission. The Shattuck Report, one of the first public health documents in the United States, was an important milestone in the evolution of the field of public health. Shattuck recommended state and local health departments or boards of health and emphasized the need for sanitary surveys.

Private Nursing. The care given to patients in their homes was very different from that in hospitals. Only the very poor or homeless went to hospitals and no one who could be cared for at home. Respectable people felt it a disgrace to send one of

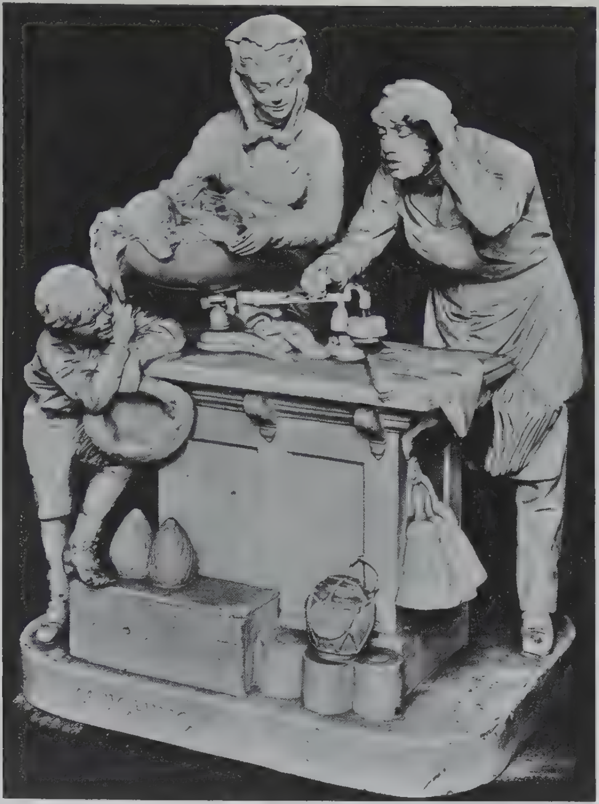

Figure 187. Weighing the baby (Statuette by John Rogers, 1877). (Courtesy of The Essex Institute.)

their relatives to a hospital. With hospital conditions as they were, this feeling is understandable.

The most expert person in the family, usually the mother, cared for a sick person. Neighbors volunteered for "night watching," which, though unskilled, assured the giving of medicines or reporting of new symptoms. In early days there were almost no doctors, so that mothers prescribed for their families.

There were a good many "monthly" (obstetric) nurses in those days whose technique probably left much to be desired, but who were "good with babies." There were a considerable number of men nurses, especially just after the Civil War. In many cases their services proved to be invaluable.

A Dr. Johnson, of Philadelphia, published in 1819 *The Nurses' Guide*, which he says deals with "a subject never before attempted by any person." He gives some naive instructions, which he considered "ample directions" for all cases. The following is a sample: "Nurses should be careful to carry out orders on time, should keep the room warm and well ventilated, should sprinkle the floor with lavendar water, vinegar, or strew it with herbs, to prevent infection." He directs that a bed be always made so it is higher at the head. He tells how to prepare a delivery bed in quite modern fashion, and advises getting maternity cases up on the third day to have their beds changed. In fracture cases he insists upon the physician being present when the bed is changed.

Bellevue in 1736 had only a small ward for the sick. It was situated where New York's City Hall now stands and in 1794 the present site was secured. For some time it was used only as a "pest house." In 1816 the city poorhouse and the penitentiary were transferred to that location, and patients who were mentally ill were also housed there. The sick were cared for by prisoners or paupers, and epidemics were frequent and terrible.

In 1837 an investigation was made, conditions were found to be unspeakable, and the pest house, prison and later the psychiatric wards were removed to Blackwell's Island. The poorhouse continued until 1848 under the same roof with the hospital. No better attention was given the sick, the dirt and neglect were shocking and the death rate was 25 per cent. Upon the creation of a medical board in 1847 matters improved slightly, but the service of the sick remained most deplorable.

Blockley, of Philadelphia, was also a combination of poorhouse, quarters for mentally ill and hospital. (During the Revolution the inmates were freed by the British troops.) All the work of the place, including nursing, was supposed to be done by the inmates.

An investigation in 1793 brought to light shocking conditions, but they were not improved. In 1832, the problem was reviewed again, and Bishop Kendrick of Emmitsburg was persuaded to send a group of Sisters of Charity to reform the place. Their work so effectually transformed the hospital that they were asked to remain, but the bishop did not feel that it was their work. After they left, the place fell back again into its old condition and remained so until Alice Fisher, a Nightingale nurse, came in 1884.

Hospital patients were penniless folk, usually homeless and friendless. In most of the city hospitals the nursing was done by inmates usually over fifty years old, many being seventy and eighty. The doctors sent feeble old people to be nurses in the wards because they could get better food there:

> There was a ward of ten old women, all helpless and bedridden; to nurse them, a decrepit old woman, withered and feeble, and for her assistant a girl with one blind eye and the other badly defective. Another ward had eight paralyzed old women, the nurse being equally old and her assistant a girl who had lost the use of one hand (Mrs. Jameson).

Nursing wages were so low that only people who could get no other work undertook it. Nurses exacted fees from the patients whenever they could. There was practically no night nursing, except for a woman in childbirth or a dying person, when a "night watcher" would be provided.

Dr. Meigs, in *The Old Nursing and the New,* offers an explanation of these conditions:

> Formerly little was known by the world in general of what took place in a hospital. The patients were largely cut off from communication with the outside [either because of restricted visiting days or because they were friendless], officers and employees of hospitals were jealous of intrusion. Visiting was not encouraged . . . Managers made tours of inspection, but saw little of the real internal workings. Visiting physicians and surgeons knew little of what the resident staff did. There was no real inspection of the work of the nurses, and if a physician had cause for complaint, the superintendent was too busy with other matters, was not used to disciplining nurses and so did nothing.

Dr. James J. Walsh, in *The History of Nursing,* says:

> Hospitals were as a rule in a disgraceful state of degradation. They were dirty and ill ventilated, they reeked with infection, so that patients who came in suffering from one disease, or from a wound, caught another disease or some virulent infection. The death rate was fearfully high, sometimes actually more than 50 per cent. In the days before Lister, hospital surgery was extremely discouraging. The only nurses that could be obtained for hospitals were women who did the menial work besides caring for the patients.

Prejudice against hospitals arose here, as it had done in Europe, because of the neglect and ill treatment of patients and because the death rate from infections was high. A writer as late as 1877 said, in speaking of maternity hospitals, "Experience has taught us that any kind of a home is a safer place for a woman to be delivered in than any hospital; but there are cases with no homes who must be provided for." The change in the attitude of the public toward hospitals indicates how radical has been the change in hospital conditions.

Religious Nursing Orders. Almost the only good hospital nursing was done by religious orders. "The beautiful order enforced by their gentle discipline, their self-denial, patience, skill and tact, were the effect of Christian charity on the sympathetic hearts of intelligent women."[3] Their gentle manner, dignity and poise were models for all nurses; the term "sister" seems to fit. Unquestionably their nursing surpassed any other in quality.

Nursing in the Hospitals. This was carried out by women of very low character and moral standing who had an absence of academic background. There was need for a highly respectable, well prepared group of women to nurse the sick. Due to the request of Archbishop Du Bourg of the Order of St. Sulpice, the first American religious order in the United States was founded by Mother Elizabeth Seton in 1809.

Elizabeth Bayley Seton (1774–1821) was born in New York at a momentous time in history. Her father, Dr. Richard Bayley, was one of the leading physicians of his day and was the first professor of anatomy at King's College, now Columbia University. He was also the health officer of the Port of New York, was responsible for the development of the quarantine laws of the State of New York, and was appointed to the position of authority to administer them.

Elizabeth, a beautiful and popular belle, married William Seton. His occupation was in the Italian banking firm of Filicchi who were shipowners and held vast American interests.

The marriage was a most happy one even when they were weathering family sorrows and financial reverses. The Setons returned to Italy, leaving New York when an epidemic of yellow fever was raging. On arrival in Italy, all passengers were quarantined in a grim and loathsome lazaretto or pest house. Mr. Seton, already in a weakened condition, succumbed to a fatal infection.

Mrs. Seton resided for a time with the Filicchi family before returning to America where she had to face financial ruin and its tragedies without the emotional and spiritual support of the Filicchis.

An interest in teaching prompted her to open a school for girls in Baltimore which was the beginning of the parochial school system of education in the United States. A choice spot of land at Emmitsburg was selected for a school. Immediately, applications were received from young women who wished to join her and become sisters in this new teaching order.

In 1809, Mother Elizabeth Seton with her newly formed religious family, attired in a habit that resembled Mrs. Seton's own widow's dress, arrived in Emmitsburg. This group was interested in affiliating with the community of the Sisters of Charity founded by St. Vincent de Paul. Requests from Mother Seton's sisters for nuns to come from Paris to America to explain the Rule of St. Vincent and help them to become established properly was denied because of Napoleon. The Rule had to be adapted to the needs of the American group.

The beginnings of the *Sisters of Charity at Emmitsburg in 1809* divided into *seven different branches of the community.*

By 1850, the sisters at Emmitsburg united officially with the world-wide community of Sisters of Charity of St. Vincent de Paul at which time the habit of blue with the large linen headdress or "cornette" was adopted. The Sisters of Charity of New York, referred to as the Black Cap Sisters of Charity, wear the headdress and habit originally worn by the founding group. The Sisters of Charity of Greensburg, Pennsylvania, although a separate entity, have retained the black cap and habit as have the New York unit. The Sisters of Charity of New Jersey, Halifax, and Cincinnati have substituted a veil but wear the original dress or habit worn before the affiliation with the Paris Sisters of Charity of St. Vincent de Paul.

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[3] Wise, T. W.: Review of the History of Medicine.

In 1812, the Sisters of Charity of Nazareth, Kentucky, were founded by *Mother Catherine Spalding*. The Sisters of Charity of Leavenworth, Kansas, were an offshoot from Mother Catherine's group. The sisters at Nazareth, Kentucky, incorporated the care of the sick in their homes in their daily work. They went on horseback to the homes of their patients. This order had both teachers and nurses.

In 1823, the Baltimore Infirmary, later the University of Maryland Hospital, was established as a private proprietary school in a clinical setting by six professors. There were four wards and two resident students. These medical resident students were required to pay three hundred dollars a year in advance for board, room, and laundry. The visits of the medical and surgical staff men were paid for every day at noon. Only patients who were acutely ill were admitted, and they were required to pay a three dollar a week fee which included room, meals and care. This hospital did not furnish any material assistance to the visiting doctors or professors. They had to use their own medicines, bandages, instruments, even their own leeches.

In short order, these professors sent a request to Emmitsburg for Sisters of Charity to staff the hospital. Their request was granted. The sisters were in charge of the hospital housekeeping, kitchen, and laundry, supervised the wards, and administered simple care and medications.

Treatments were carried out by the house doctor or resident—this being a learning experience for him.

In 1829, *the Sisters of Our Lady of Mercy* of Charleston, South Carolina, undertook an unusual assignment—the Hospital of the Society of Working Men. The Brotherhood of Saint Marino was an association of mechanics and laborers who were the motivating force behind the inception of this hospital and assumed its financial support. The Society evolved because of the need for a place to house and take care of homeless men.

Demands for nursing care from the various religious orders became very great. Epidemics though an added burden were handled with courage and skill, while visiting nursing was an important function of their efforts. The Sisters of Mercy offered their services to the Board of Health during an outbreak of cholera and yellow fever.

When epidemics subsided many children were left orphaned. Institutions were needed to care for these. St. Vincent's Infirmary, in Louisville, Kentucky, opened mainly to house the orphans after a cholera epidemic. *Foundlings* were being abandoned in many countries, necessitating the construction of such institutions.

Sisters staffed psychiatric hospitals, such as the state hospital, Maryland Hospital in Baltimore, which was under the supervision of the Sisters of Charity until 1840. Then, the Sisters opened what was called later the Mt. Hope Retreat.

When the United States Government opened the Leprosarium at Carville, Louisiana, and no one else seemed interested or willing to accept this assignment, the Sisters of Charity of St. Vincent de Paul took over the nursing service administration in 1896.

Many religious orders contributed their

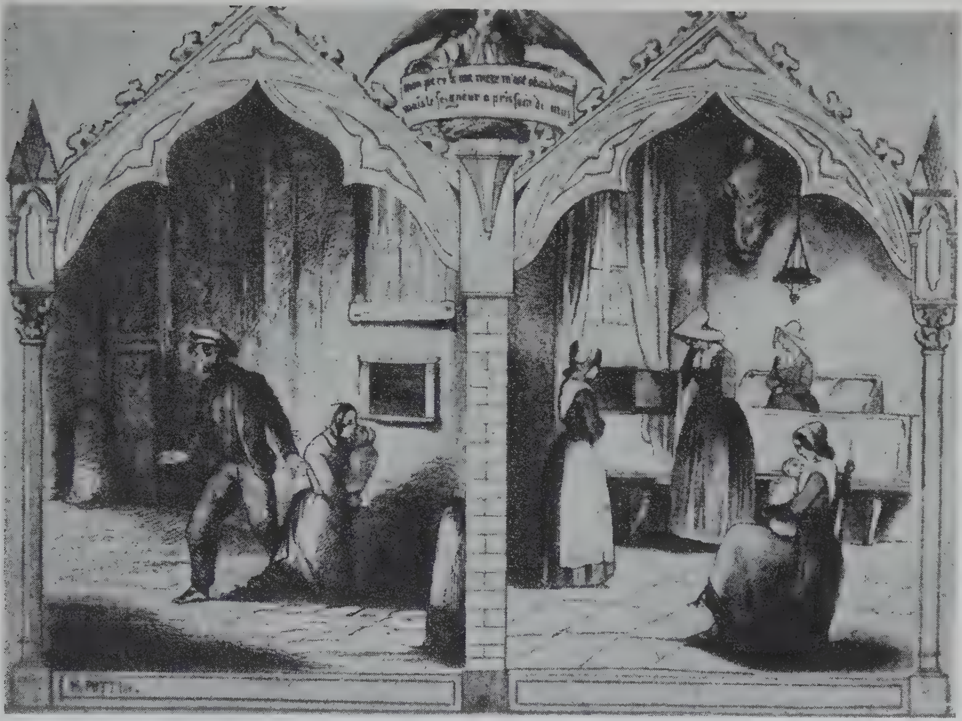
mon pere & ma mere m'ont abandonné
mais le seigneur a pris soin de moi

Figure 188. *Left*: A woman is secretly placing her child in the receiving box of a foundling asylum. *Right*: Glimpse into the interior of the foundling asylum with the box opened. From the magazine "L'Illustration," 1852. (Ciba Symposia, 1940.)

efforts to alleviate the sickness, trouble, and tribulation of this period, which is evidenced in the many hospitals constructed and serviced by them.

Sister Mary Aikenhead, who was trained in England, about 1815 founded the *Irish Sisters of Charity.* They did social work among the poor and much visiting and hospital nursing during epidemics of plague, cholera and typhus. At Cork in 1831, during a cholera epidemic, the people were afraid to enter hospitals until they learned that the Sisters of Charity were working there.

Mother Aikenhead wished for a sister's hospital in Dublin, and sent three nuns to be trained at the Hôpital de La Pitié in Paris. They remained there a year. Upon their return a hospital of twelve beds was established, which grew rapidly into an excellent institution. They organized other hospitals and an asylum for the blind. In 1857 they went to Australia and founded hospital work there.

In 1831 Mother Catherine McAuley founded the *Sisters of Mercy* with a house near Dublin.

Many Roman Catholic nursing orders sent their members to America for missionary work. Nuns came from Ireland, France, Germany, Italy, Spain, Portugal. The *Sisters of Mercy,* the *Sisters of the Holy Cross* and others started communities and established hospitals. Some of them also did private nursing.

The *Sisters of St. Joseph,* the *Sisters of Charity of Nazareth,* and the *Ursuline* nuns had many houses and hospitals. The *Sisters of St. Mary,* who worked in St. Louis in the eighties, were called the "smallpox sisters" because of their work with this dreaded disease.

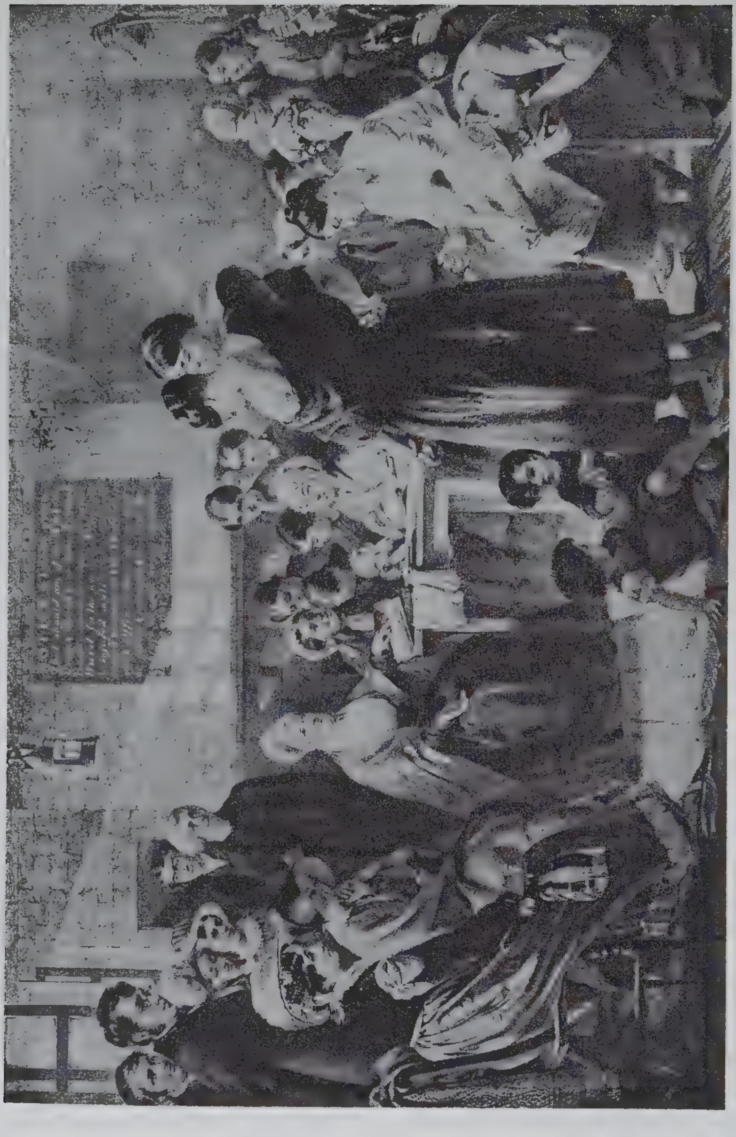

Figure 189. Elizabeth Fry reading to the prisoners at Newgate Prison, 1823. (Whitney: *Elizabeth Fry, Quaker Heroine.* Little, Brown & Co.)

At the time of the Civil War the larger and better hospitals were those belonging to the Roman Catholic nuns. The Alexian Brothers were in hospital work by 1870.

A *social reformer* of note was *Mrs. Elizabeth Gurney Fry* (1780–1845) whose phenomenal work in prison reform has been recognized throughout the world. Elizabeth Gurney was a deeply religious Quaker who married Joseph Fry and settled in London. As an active member of the Society of Friends, she decided to seek admittance to *Newgate Prison* to attempt to reform the criminals; this was an early rehabilitation project.

In 1813, she visited Newgate and was horror-stricken at the conditions and the treatment of the poor victims incarcerated there. The prison was cold, dark, damp, and poorly ventilated. The prisoners were meagerly fed, not properly clothed, and not segregated. Thieves, murderers, sex offenders, mentally ill, mentally retarded —all were housed together. Many children were inmates of this institution.

Mrs. Fry asked to talk to the women prisoners. Armed men were offered to protect her from this snarling mob. She refused their protection, and her quiet manner, sombre dress, and genuine interest in them calmed the unruly group. Later, she brought food and clothing, soap and towels for the children as well as adults; she commenced a program of instruction for the children which was attended later by the women; and she provided the women with sewing materials to do for themselves so that they might earn a livelihood when released. She inspired some of her friends to come and read to them as they worked.

Elizabeth Fry was an eloquent and forceful speaker and after visiting prisons in the British Isles and in Europe, she endeavored to share her findings with the public. She made them aware of the need for reform in nursing and in hospitals as well as in prisons.

Mrs. Fry set an example of human kindness to people who had received relatively little of it from life. She urged careful trials for offenders; planted the ideas for reform schools; stressed the need for psychiatric cases to be separated from criminals; and insisted that law offenders needed moral assistance in hospitals, rather than punishment in jails. Her concepts of rehabilitation were very sound.

In England in 1840, this group of ardent helpers who assisted her so capably in her crusade were organized and called the "Society of Protestant Sisters of Charity." Their primary objective was to supply nurses for the sick of all classes in their homes. This group was motivated by deep religious convictions but were secular in organization. They became the *Institution of Nursing Sisters.*

The work of Mrs. Fry had a profound influence on many people including a young Lutheran minister, *Theodor Fliedner* (1800–1864). He was appointed pastor of a church in Kaiserswerth, Germany, in 1822. Shortly after his arrival, the main industry of this little community failed, and the people had financial difficulties. Pastor Fliedner set out on a tour to raise funds and returned with money and ideas

Theodor Fliedner.

Figure 190. Theodor Fliedner. (From Bihet's *Histoire du Nursing*, Editions Desoer, Belgium, 1947.)

for a program of social work prompted by the efforts and results of the work of Mrs. Fry.

He married Frederika Münster in 1828, and she was a faithful wife and mother to their ten children. Due to the inspiration of her husband, she organized a Woman's Society for visiting and nursing the sick poor in their homes. It was well done but was inadequate to meet the heavy demands. Women prisoners and children were being released from the jails and needed hospital as well as nursing care, and also schools. The Fliedners opened their home in 1833 for these returning prisoners.

In 1836, Pastor and Frederika Fliedner started a hospital and training school for the *Deaconesses of Kaiserswerth.* They purchased the largest, finest house available in Kaiserswerth. By the end of the first year, seven hard-working young women were in training. Pastor Fliedner, like St. Vincent de Paul, wanted youthful, enthusiastic girls of refinement with healthy bodies, good moral standards, good character, twenty-five years of age or over, and devotion to the love and work of the sick. Each one was consecrated for her work by the laying on of hands and a blessing.

The dress of the deaconess was a plain blue cotton gown with a white apron, large turned-down collars, white muslin cap with a frill around the face, tied beneath the chin with a large white bow. When they went outside, they wore a long black cloak and a black bonnet over their cap.

Figure 191. Frederika Münster with student nurses. (Bihet, *Histoire du Nursing.*)

The initial course of instruction consisted of housework, bookkeeping, letter writing, and oral reading. The student made a choice between becoming a teacher or a nurse. The practical experience for the teacher was obtained in the school for children while that for the nurse was procured in the hospital. In addition to her hospital experience, the student was given some instruction in visiting nursing in the village under Mrs. Fliedner's supervision.

According to the original plan, these deaconesses took no vows, but made a simple promise "to work for Christ;" they received no salary, and were taken care of for life. This is the so-called *motherhouse* system, which, like the monastic system, provides its members with a permanent home, so that when deaconesses are sent out to private duty, to other hospitals, to do visiting nursing or to distant mission fields, they are always under the protection of their home organization.

Their work is centered chiefly among the poor. Deaconesses may work in almshouses, have charge of orphanages, teach children, work among prisoners or unfortunate women or do private nursing. They have helped in many epidemics and in many wars.

Many schools for nurses have inherited much from the deaconess organizations and have taken especially from Frau Fliedner's régime items such as preliminary grouping (long called "probation"), the doctor's certificate of health, usually a clergyman's certificate, money allowance, regular classes and lectures, special etiquette and a woman superintendent in full charge.

The deaconess hospitals took the view, unusual in religious organizations, that a nurse must follow out the doctor's orders exactly, and that he, not she, was responsible for the outcome. They did not admit "lady probationers," as did the English hospitals, but insisted that all nurses be on the same social level. They required that nurses sent out to private duty be treated as members of the family, not as servants, and they saw to it that they were allowed proper time for rest.

After Frederika Fliedner died in 1842, Pastor Fliedner married *Caroline Bertheau* who continued this very worthy project. It soon seemed essential to give some brief instruction in the care of the sick to the women of the community. This endeavor had two objectives: helping the women of the community to do a better job of caring for their families, and providing a reservoir of lay nurse helpers.

Kaiserswerth remained the motherhouse of many deaconess institutes throughout the world, and the graduates of the deaconess program went to these areas bringing an atmosphere of peace and love to the sick and needy.

Communities and doctors were becoming aware of the value of better prepared religious as well as lay women for caring for the sick. *In 1841,* a doctor asked for a nurse to work in his dispensary, and her work was to be preventive in character. She was to instruct mothers in the care of the sick in homes; to ask if all members of the family had been vaccinated; to report illnesses; and to teach ways of cooking inexpensive foods.

Pastor Fliedner's influence extended to America when in 1849 he with four deaconesses arrived in Pittsburgh. They were to assume responsibility for the *Pittsburgh Infirmary* (now *Passavant Hospital*). This was the first Protestant church hospital in the United States. The clergyman who requested the assistance of Pastor Fliedner in permitting the deaconesses to come to this country was *William Passavant.* A deaconess motherhouse was to be established here to educate sisters for this country. This became a reality in 1850. The first American deaconess was *Louisa Marthens* who was consecrated on May 28, 1850.

Jacobs[4] has indicated that Pastor Passavant's plan was too progressive for his parish to undertake so that it was never a large project, but the quality of the work of the deaconesses was noted in their efficient care of the sick during cholera epidemics, the Civil War, and in the establishment of other institutions.

Sister Elizabeth Fedde was the first nurse to labor among the Norwegian sick poor of the United States. She came from Norway and was a trained nurse as well as a trained pharmacist. Brooklyn, New York, was the scene of her activities, and she was active in caring for the sick in their homes.

The first nursing order which was established by the *Anglican Catholic church* was the *Sisters of St. John's House* in England. They were founded in 1848 to give nursing care to the sick in hospitals and in the homes of the community. Preparation for this work was given at King's College Hospital.

The *Episcopal Church in the United States* established a group of nurse religious in the Diocese of Maryland. These deaconesses cared for the sick in a house called St. Andrew's Infirmary. This group had no previous training in nursing but were imbued with a zealous desire to be of service. Their efforts were rewarded.

The *Sisters of the Holy Communion,* founded in 1845, carried out both hospital and home nursing in addition to doing parish work and teaching parish school. *St. Luke's Hospital* in New York City was constructed due to the vision, inspiration, and direction of its founder, first pastor and superintendent, *Dr. Muhlenberg.* It opened first as The Infirmary of the Church of the Holy Communion in 1854 and then became St.

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[4] Jacobs, H. E.: *A History of the Evangelical Lutheran Church in America.* (The American Church History Series, IV), New York, The Christian Literature Company, 1893, p. 387.

Luke's Hospital in 1858. The Sisterhood of the Holy Communion under the leadership of *Sister Anne Ayres* accepted the responsibility of providing the superior nursing service in St. Luke's from its inception until 1888.

The architecture of St. Luke's Hospital was most interesting as is recorded.[5] It was built around the Church of the Holy Communion. "The patients lived in the House of the Lord. St. Luke's, as a church, has the chapel for its nave and the wards for its transept." The prayerful atmosphere with its soothing organ music pervading the confines of the wards coupled with the willing service of the sisters must have been of great value in the healing process.

Dr. Muhlenberg emphasized that the patients were guests of the church and stressed the concept of the opportunity of the Christian family to entertain their guests, all of whom were sick. He mentioned that the nursing should consider the need for "a cheerful spirit, skillful devotion and appreciative interest in the patient individually."[6] This was a preview of our modern idea of considering the patient as a person! The motto of St. Luke's appears on the pin of the School of Nursing: *Corpus sanare, animam salvare*—to heal the body and to save the soul. Religious fervor accompanied scientific progress.

There were several anecdotes that portray a picture of the times. In the instructions given to the sisters, Dr. Muhlenberg taught that they were to pour the patient's medication and bring it to this patient when it was due rather than follow the then currently accepted method which was to require the patient to be responsible for taking his own medicine. He felt that this would eliminate many problems.

> Patients cannot be trusted with their own medicine. They cannot be made to understand the fallacy of the argument, that if a teaspoonful of anything will cure a man slowly, the whole bottle will do it immediately. It is not an unheard of thing for an elegantly disguised and flavored medicine to be rubbed on an injured limb, and for the cooling lotion, ordered at the same time, to be faithfully taken in teaspoonful doses after meals. To avoid such gross mistakes as these, it is customary in hospitals for the nurse to administer the medicines according to distinctly marked directions on the bottle. This works well, and mistakes are rare. But to have the medicine given by one who is herself responsible for its proper administration and preparation, who is required by the rules of the Sisterhood to understand its nature, the ordinary dose, and its expected effect, and who is honest and faithful enough to report immediately any mistake which may occur, shuts up many sources of error and danger.[7]

Another interesting notation concerned the value of diet in the plan for care of the patient. He stated,[8] "Every physician knows that the only hope for a man in the third week of typhoid lies in the amount of nourishment he can be induced to take. In private practice, he administers food and stimulant with his own hand." He proceeded to discuss the impossibility of the physicians' assuming this duty in a hospital and inveighed against any but the best prepared and most capable of nurses accepting this responsibility.

In this century and the early part of the twentieth, it was well known that only good nursing care brought a patient through a serious case of pneumonia, typhoid fever, or other affliction of serious import.

In 1863, the Sisterhood of the Holy Communion reorganized; some of the sisters remained in the original order; others formed the Sisters of St. Mary; while another segment established the Sisters of St. Luke and St. John.

The *Sisters of St. Mary* engaged in a special field of nursing that needed skilled nursing attention—venereal disease control. They managed a home for delinquent girls and women, and finally built and staffed St. Mary's Free Hospital for children in New York City.

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[5] *History of the St. Luke's Hospital Training School for Nurses,* New York, 1938, p. 18.

[6] *Ibid.,* p. 20.

[7] *Ibid.,* p. 23.

[8] *Ibid.,* p. 24.

In 1855, another very important Anglican order, *St. Margaret's Sisterhood,* was founded. The Sisters of St. Margaret were invited to come to the United States, and in 1871 they arrived from England. Their primary objective was to take over the nursing service administration of the Children's Hospital in Boston. This community of sisters remained in charge for forty-five years. Their greatest contribution was at this hospital, but they opened and maintained several others through the years.

St. John's Sisterhood and the *Sisterhood of All Saints,* both Protestant, worked in Baltimore. It was from the latter that Sister Helen, the first superintendent of nurses at Bellevue, came.

Deaconesses were found also in the *Methodist Church* and nursing profited by their efforts. Many of the deaconesses' hospitals were maintained under the supervision of these deaconesses.

Still another group of *deaconesses* was organized by the *Mennonite Church.*

PSYCHIATRIC HOSPITALS

Mental illness was generally thought of as incurable. Few persons realized that these patients needed humane treatment and the law classed them next to criminals. Up to 1820, the mentally ill were exhibited for payment for the diversion of the public. Iron manacles were used in asylums up to 1886, and the McLean Asylum, of Massachusetts, established in 1817, was the first institution of the sort to treat its patients kindly. The Friends' Asylum at Philadelphia, of the same period, was one of the few hospitals which appreciated the patient's needs.

In America, the pioneer crusader for the reform for the mentally ill was *Dorothea Lynde Dix* (1802–1887). Her first contact with the mentally ill came in 1841 when a theological student who had been given a class assignment to teach Sunday school at the jail in East Cambridge, Massachusetts, asked if she, a retired schoolteacher, would be willing to assume his assigned task. She was shocked by the environmental conditions in which the prisoners lived. Many of the prisoners were mentally ill. The treatment they received ranged from indifference through negligence to brutality. The assumption seemed to be that they were incapable of sensation so no heat was provided for these tragic prisoners. Due to her persistence, logic, and forcefulness in the court of East Cambridge, heat was provided in jail. This was the first milestone.

After surveying the needs of the mentally ill in Massachusetts, gathering data,

Figure 192. Friend's Asylum, 1813.

securing the support of influential citizens, presenting the facts, and then obtaining the results she desired, she moved on to the state of Rhode Island. Her phenomenal success continued as she gained the financial backing of a wealthy gentleman, Cyrus Butler, who provided for the establishment of *Butler Hospital,* an outstanding psychiatric institution.

The success of Dorothea Dix was due to the painstaking cataloging of facts which were repulsive to honest, forthright citizens. Such was her presentation of a patient in Rhode Island who had been literally entombed in a six by eight foot stone cell into which no sun, heat, or companion could enter because the door was bolted. The poor helpless sufferer had frost and ice coating the walls, the beds, and himself. The realization of the existence of this incredible cruelty won support for the patients for whom she fought so desperately. She had found patients "confined in cages, closets, cellars, stalls, pens, chained, naked, beaten with rods and lashed into obedience." Through her efforts, the first state psychiatric hospital was constructed in Trenton, New Jersey; and Canada as well as the United States and even Scotland elevated their standards of care for the mentally ill. Her fiery crusade continued until at the time of her death, due to her heroic campaigning, more than thirty psychiatric hospitals had been established in the United States and in other countries.

Samuel Gridley Howe (1801–1876), the well known social reformer, was born in Boston, graduated from Brown University in 1821, and received the degree of M.D. from Harvard in 1824. A major accomplishment was his work with the blind. Through his efforts, the New England Asylum for the Blind, later called *Perkins Institute,* was chartered in 1829 and opened in 1832. He directed this famous school for 44 years. Two famous pupils were Laura Bridgman, who was deaf as well as blind, and Anne Sullivan Macy, who tutored Helen Keller. The education of individuals with the special problems of blindness and deafness was now a reality.

Dr. Howe was an ardent supporter of Dorothea Dix in her efforts on behalf of the mentally ill. His wife, *Julia Ward Howe,* joined him in the opposition of slavery.

Louis Braille (1809–1852), another pioneer in the crusade for assistance for the blind, became blind himself at the age of three as the result of an accident. He was admitted to a school in Paris when he was ten years of age, and later he became a teacher there. In order to augment the learning situation for his students, he improved the system of writing with dots which Charles Barbier had devised. The *Braille system of communication* by the use of this raised-dot method has been utilized by the blind for printing, writing, and in musical notation. Louis Braille had an interest and developed skill in playing the organ, becoming an organist in a church in Paris.

The facile pen and ingenious skill of *Charles Dickens* (1812–1870) were forceful weapons for social reform in the nineteenth century. He had the rare ability to portray in a startlingly revealing way the social evils of his day, to break the literary barrier by his selection of characters from the stratum of society that needed assistance, and to provide a detailed and accurate description of many diseases. This was an unusual combination of faculties.

Disease was a constant and often catastrophic problem. It was strikingly in evidence because of the lack of institutions to house people with specific conditions. His powers of observation socially and medically were most acute and vie with those of the most gifted medical clinician of the period. Brain[9] develops in an interesting

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[9] Brain, Russell: *Some Reflections on Genius.* Philadelphia, J. B. Lippincott, 1960, pp. 123–136.

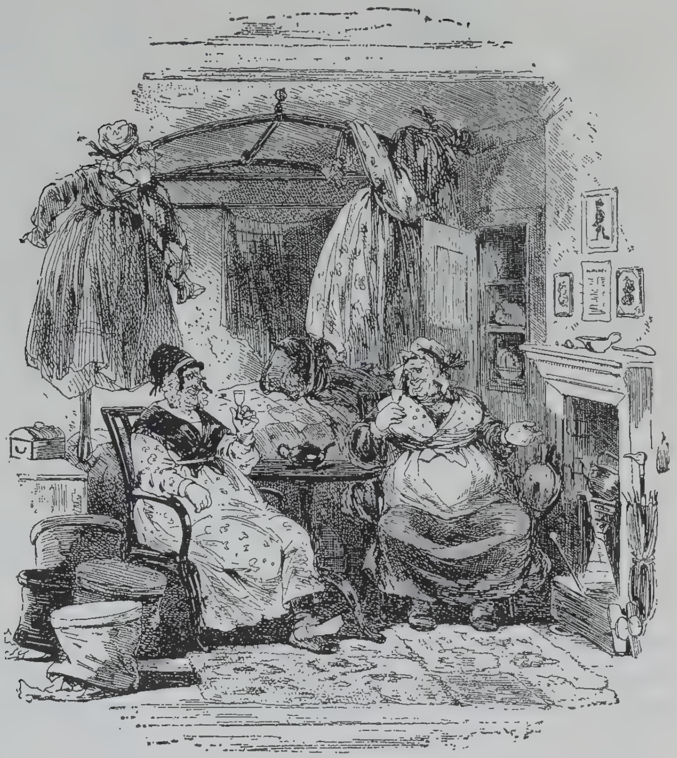

Figure 193. "Mrs. Gamp proposes a toast." (From Dickens' *Martin Chuzzlewit.*)

way the medical observations and recordings of Dickens.

Dickens waged a powerful crusade to make citizens aware of needs for social change. He portrayed the plight of the orphan and the need for more stringent child-labor laws; he revealed the unfair court trials, with imprisonment for minor offenses, and the unjust length of imprisonment, with members of the family incarcerated with parents[10]; he wrote of the birth of children in prisons and their lives there, of life in workhouses and the evils of the apprenticeship system,[11] of poor preparation of teachers and educators, of cruel treatment of the mentally retarded,[12] of brain washing of victims in prison,[13] of the unscrupulous tactics of lawyers, of inadequate preparation of doctors, of grave robbing to sell cadavers to medical students,[13] of the ghastly level to which nurses had sunk.

Dickens' *Martin Chuzzlewit* (1844) focused attention on the nursing care given by pardoned criminals, women who were too old for harlotry, and women of low moral standards with a lack of interest in or love for their fellow men. His immortal portrait of *Sairey Gamp* represents this low level of unfeeling, unsympathetic, alcohol-imbibing characters who contributed their share to the sufferings of mankind.

The later part of the nineteenth century revealed a veritable renaissance in medical and biological sciences as well as in development of secular nursing.

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[10] Dickens, Charles: *Little Dorrit* (1857).

[11] Dickens, Charles: *Oliver Twist* (1838).

[12] Dickens, Charles: *Nicholas Nickleby* (1938).

[13] Dickens, Charles: *A Tale of Two Cities* (1859).

X

The Nineteenth Century (Continued)

The late nineteenth century commenced with the development of the science of bacteriology.

BACTERIOLOGY, PREVENTIVE MEDICINE, AND ASEPTIC SURGERY

It was *Louis Pasteur* (1822–1895), the great French chemist, who disposed of the long-accepted theory of spontaneous generation or abiogenesis. It is interesting that this great scientist and boon to medicine and society was trained as a chemist and not a physician.

In 1860, he began to study the air. Drawing air through a tube containing a plug of cotton, he noticed that the cotton often became black with dust, and inspection of the dust under the microscope revealed bacteria. Presence of airborne bacteria was confirmed. He found that living ferments abounded on many objects and in water. He experimented with heating flasks of broth, expelling the air in the process and demonstrated that no growths of bacteria appeared.

The wine industry sought the aid of Pasteur because of the spoilage of wine. He investigated it and discovered yeast plants and tiny microscopic substances, bacteria, contaminating the wine. He held that fermentation resulted from airborne growths on the ripened fruit. Pasteur instructed the manufacturers to heat the wines to a certain temperature to kill the ferments without injuring the flavor of the wine. This process of heating liquids and rapidly cooling them has been applied to other liquids, and this familiar method is referred to as pasteurization.

The silkworm industry profited by Pasteur when he determined that parasites caused the disease that was threatening to destroy the silk industry. His next project came when Pasteur was asked by the French Government to inspect the farm animals that were dying in the pastures. Pasteur discovered that the disease was *anthrax* and that it was caused by bacteria.

He devised a vaccine which when innoculated into animals protected them against the disease.

Pasteur's last and perhaps his greatest accomplishment was his study of *rabies* in 1880. His efforts resulted in the development of a method of vaccinating dogs[1] to enable them to become immune to rabies. The fact that the cause of the disease had not been established was a serious disadvantage. However, he produced the well known *Pasteur treatment for rabies* which was used on a young boy, Joseph Meister, after he had received many serious bites from a rabid dog. The treatment was a success and was reported in *A Method of Preventing Rabies After a Bite.*

One success after another crowned the efforts of Louis Pasteur, a real benefactor of society.

Joseph Lister (1827–1912) was the first to apply Pasteur's phenomenal discoveries to the field of surgery. The conditions existing in the hospitals at this time were indescribable. Surgical patients and those admitted with injuries as well as the patients in obstetrics were exposed to severe infections, such as blood poisoning (septicemia), erysipelas, puerperal fever, lockjaw (tetanus), and "hospital gangrene."

Lister's particular field was surgery, and he was shocked and horrified at the contagious nature of infection associated with open wounds and with the appallingly high death rate that followed. He dedicated himself to the duty of investigating and thus correcting methods of surgery, as well as dissipating the obnoxious odor of the wards partly due to poor ventilation in the wards.

He pondered the swiftness of the surgeon who operated amid the screams of his unanesthetized patient; then watched for the inevitable signs of infection which seemed localized in the hospital wards. With the availability of anesthesia, many more surgical operations were performed; the amount of infection increased, and the surgeons talked freely about the formation of "laudable pus." Lister felt that it must be due to the surgeon, his instruments, his assistants, and his methods of carrying out technique. He had studied the work of Pasteur and immediately applied the germ theory of disease to his surgical procedures. He looked for some method of keeping germs out of wounds and decided upon the use of carbolic acid. In 1865, Lister used carbolic acid (phenol) successfully in treating a compound fracture. He used it to disinfect his instruments, to saturate the surgical dressing, and to spray the solution into the air above the incision during the operation. His success increased as his methods and techniques were improved.

Infections and the dangers of infections were drastically reduced as a result of his contributions, and Lister received many honors for his heroic efforts. Among them, he was raised to the peerage; from then on he was called Lord Lister. In 1903 he saw the Lister Institute of Preventive Medicine become a reality.

Surgical aseptic technique has replaced Lord Lister's technique, and hospitals have been transformed from the places of stench, horror, and death.

Robert Koch (1843–1910) was the brilliant scientist who proved that every infectious disease was caused by a specific micro-organism. Then the foundation for the science of bacteriology was laid! Koch was a doctor of medicine with an intense scientific curiosity. He proposed four "postulates" by which a specific organism can be proven to cause a certain disease: (1) Obtain a specific organism from blood or tissues of a diseased person; (2) Make a pure culture of this organism; (3) Produce the disease condition in another person or animal by inoculation with material from the pure culture; (4) Procure the same spe-

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[1] It has since been realized that many other animals can transmit rabies.

Figure 194. Robert Koch. (Courtesy of Osler: *Evolution of Modern Medicine.*)

cific organism from the now-diseased second person or animal.

His contributions included: a method for growing or culturing microorganisms; a system of staining microbes with different colored dyes to be seen under the microscope and photographed; and detection and identification of the specific causative organisms of several diseases as the anthrax bacillus and the tubercle bacillus. In addition to identifying the bacillus of Asiatic cholera, Koch proved the spread of this disease by way of water, food, and clothing.

Now the solution to the perplexing and mysterious aspect of disease, formerly explained as evil influences, demons, the night air, was that all carried these invisible causative organisms called microbes.

Spontaneously as fire ignites dry timber, the scientific investigations were productive. Many specific organisms were identified and hope of vaccines or medications for treatment and prevention of disease were forthcoming.

In 1872, Cohn, who first classified bacteria as plants, published the first modern classification of bacteria.

In 1874, Armauer Hansen of Bergen, Norway, isolated the lepra bacillus. Leprosy is now called *Hansen's disease* after him.

The discoveries of bacteria continued in rapid succession throughout the rest of the nineteenth century.

Ernst von Behring (1854–1917) was a Prussian doctor who spent some time, in the latter part of the nineteenth century, at Koch's Institute for Infectious Diseases. His studies there resulted in the introduction of a new principle—that of using serum from immunized animals in the prevention of diseases. In 1892, with Dr. Kitasato, he produced diphtheria antitoxin, and later that year he prepared tetanus antitoxin.

On Christmas night in 1891, von Behring treated successfully, by using diphtheria antitoxin, a child suffering from diphtheria in Bergmann's Clinic in Berlin.

Another theory that needed to be exploded was the still popular humoral theory. It was examined scientifically by the great German pathologist, Rudolf Virchow (1821–1902), who proposed in 1855 that the basic unit of life was the cell, that cells change in response to internal as well as external stimulus or irritation. Changes in cellular structure result in pathological conditions.

The field of *psychiatry* has benefited by the efforts of *Daniel Hack Tuke* (1827–1895) as well as members of several generations of Tukes; it seems to have been a family undertaking. His great grandfather William was a devout member of the Society of Friends, more commonly known as Quakers, and was opposed to brutality in any aspect. This abhorrence was carried into the care of the mentally ill from the time he visited several hospitals including Bedlam and observed the inhumane treatment given to these unfortunate creatures who were not treated as sick individuals.

Through the efforts of William Tuke and his son and daughter-in-law, money was raised to establish a home where these patients could be treated as human beings. The home, called "The Retreat," seemed well named because it was a place of security, a haven during a stormy period of life. An additional advantage was that good care was provided inexpensively. The construction of the building was unique because in place of barred windows, it had window frames made of steel which looked like wood. The building itself had a homey, comfortable appearance in a setting of trees. The interior atmosphere was as conducive to convalescence as the exterior.

William's grandson succeeded in continuing the fight for better care of the mentally ill. In 1854, he described the disgraceful conditions of the York Insane Asylum and Bedlam. The directors seemed to have labored under the impression that these patients were devoid of feelings because some of them were chained in a sitting position; others were placed in a squatting position; some of them were clothed; many others nude; all of them were cold, even to the point of freezing; and the lack of sanitary facilities made the total environment unbearable. Solitary confinement of the patient in a chamber of horrors and occasional flogging were used. Fear technique was used for disciplinary measures.

William Hacks's great grandson Daniel continued the fight for this cause. He became a physician and eventually one of England's most celebrated psychiatrists. He gave courses in psychology, maintained a private practice, and was chief psychiatrist at the York Retreat. Tuberculosis interrupted his work, and he had to seek a climate more conducive to cure.

Among his writings are included *A Manual of Psychological Medicine, History of the Insane in the British Isles, The Influence of the Mind upon the Body in Health and Disease,* and his famous compilation, *Dictionary of Psychological Medicine.*

DISCOVERY OF RADIUM AND X-RAY

Two discoveries occurred at the close of the nineteenth century that were of tremendous significance to many aspects of society including the medical field.

The first was made by the physicist, *Wilhelm Roentgen* (1845–1922), who discovered the *x-ray in 1895.* In his capacity as professor of physics and mathematics, he had been fascinated by the studies on radiation and stumbled upon his great gift to society. In searching to find the invisible light in his laboratory, he connected an induction coil to a Crooke's tube. It threw out light and glowed with a phosphorescence when electricity was passed between two electrodes inside the tube. In order to eliminate any visible rays, Roentgen covered the tube completely with black paper and excluded all light from the room. On the table across from the tube, Roentgen placed a screen covered with a chemical preparation that emitted a fluorescent glow. There was no visible light anywhere and yet something had to come from the tube—his invisible ray—that caused the screen to give off a greenish glow. These rays penetrated many things including human flesh, but the bones remained opaque. His photograph of this was scarcely believable even to him.

His news was received eagerly, and honors, including the Nobel Prize in Physics in 1901 and an honorary degree of Doctor of Medicine (he had earned a Ph.D. degree), were accorded Roentgen.

The application of x-ray to the field of medicine was first used only in its most meager diagnostic aspect. Later, this was expanded greatly, and its therapeutic uses have been realized.

The second disclosure was that of *radium* by *Pierre and Marie Sklodowski Curie.* The realization came about in a most unusual way. Marie, in selecting a problem for her doctoral dissertation, chose to pursue further some research which had been carried out by Henri Becquerel. He had worked on uranium salts and noted the presence of rays of undetermined origin.

As her experimental work progressed, Pierre joined her in this exciting study. Their efforts were reported in 1898 in a paper discussing a new radioactive substance contained in pitchblende, the ore which was the source of the uranium. The extracted substance, radium, has been found to possess the ability of destroying some types of malignant cells and tissues. The Curies shared the Nobel Prize in physics in 1903 for their accomplishment. Madam Curie received it again for chemistry in 1911, her husband having been struck down and killed instantly as he crossed the road in 1906.

To society they both made a monumental contribution whose benefits have still not been fully realized.

EDUCATIONAL PROGRESS IN MEDICINE

There was an obvious need for a unifying force to weld the members of the medical groups together. An opportunity to discuss common problems, to share evidence of progress, to set standards for acceptable practice, to upgrade the educational background of the practitioner, all played a part in the establishment of local and then *national organizations.*

In 1832, the British Medical Association was formed; in 1841, the Pharmaceutical Society of Great Britain was established; in 1847, the American Medical Association was founded; in 1852, the American Pharmaceutical Association was developed.

One of the first items of business of the newly formed American Medical Association was a resolution asking for the separation of licensing functions from teaching institutions.

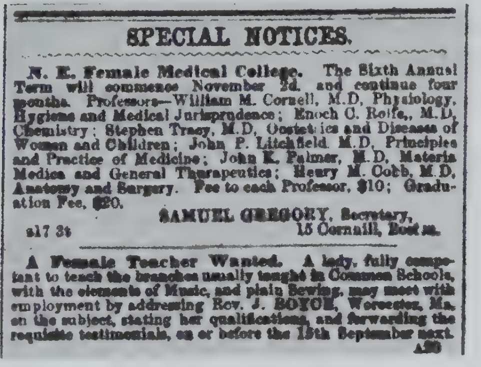
Then, in 1883, the *Journal of the American Medical Association* was published for the dissemination of information to its members. This was a beginning for the intellectual upgrading process.

The fruition of the plans to establish these organizations was a triumph but it was a slow, painful process. The improvement of the educational preparation of practitioners was not an easy or immediate victory.

There was a striking variation in the educational background and preparation of practitioners in medicine in this century.

An example of the lack of uniformity in educational preparation is detected when one reads some of the biographies of the period. An educated gentleman left Massachusetts to avail himself of a homesteading opportunity. In 1871, he went to Kansas after being wounded in the Civil War. Needing pharmaceutical supplies, he wrote to a supply firm for the necessary medicines. Probably because of the tone of the letter, he was mistaken for a doctor, and his supplies were addressed to Dr. Ward. When they arrived at the small town railway office, the clerk noticed the address, paying particular attention to the gentleman's title and immediately Dr. Ward practiced medicine under marked and voluble protest. When Kansas required doctors to be licensed, this gentleman, without instruction, formal or otherwise, was reputed to be the only one to pass the medical examinations in three counties.

The advertisement in Figure 195 appeared in the classified section of a Boston newspaper in 1853 just twenty years before the training school for nurses opened at the New England Hospital for Women and Children. Recruitment advertisements such as this one were found in periodicals, and it is apparent that qualifications for admission were not listed. The course of study was only *four months in length,* and it is noted that the faculty possessed the degree of M.D. earned or acquired; that the doctor who taught anatomy was not also responsible for physiology.



SPECIAL NOTICES.

N. E. Female Medical College. The Sixth Annual Term will commence November 2d. and continue four months. Professors—William M. Cornell, M.D, Physiology, Hygiene and Medical Jurisprudence; Enoch C. Rolfe,, M.D, Chemistry; Stephen Tracy, M.D, Obstetrics and Diseases of Women and Children; John P. Litchfield, M.D, Principles and Practice of Medicine; John K. Palmer, M.D, Materia Medica and General Therapeutics; Henry M. Cobb, M.D, Anatomy and Surgery. Fee to each Professor, $10; Graduation Fee, $20.

SAMUEL GREGORY, Secretary,
15 Cornhill, Boston.
a17 3t

A Female Teacher Wanted. A lady, fully competent to teach the branches usually taught in Common Schools, with the elements of Music, and plain Sewing, may meet with employment by addressing Rev. J. BOYCE, Worcester, Ma. on the subject, stating her qualifications, and forwarding the requisite testimonials, on or before the 15th September next.
A20

Figure 195. An advertisement which appeared in the classified section of *The Boston Pilot,* Sept. 24, 1853. Term lasted 4 months; the system middle age guilds had of paying each instructor individually is noteworthy.

The gamut in medical education ranged from no preparation in basic education or medicine, through meager preparation in one or both, to good preparation; the evolution of the professions was going through the steps of trial and error, good as well as poor forms of apprenticeship, opportunities in proprietary schools, and, at last, a beginning toward schools under the aegis of a university. It is interesting to realize that in 1848 the need for practical demonstration for students of medicine was realized and recorded as was the necessity for clinical teaching.

In reviewing the accomplishments of the *Association of American Medical Colleges* which was organized in 1890, one notes only a recommendation of a minimum standard of high school graduation as a prerequisite for the study of medicine! Yet, conversely, Johns Hopkins University in 1893 made a bachelor's degree a prerequisite for admission to its medical school. This wide diversity in the background of doctors compelled the leaders in medicine to consider the establishment of some required standard of preliminary education.

An outstanding *medical center* came into existence in Baltimore when Johns Hopkins University opened in 1876, Johns Hopkins Hospital was founded in 1889, and Johns Hopkins School of Medicine was established in 1893. A distinguished faculty was obtained; among them was Dr.

Figure 196. William Procter reads to his apprentice the details of his experiment with percolations of drugs. (Courtesy of Wyeth Laboratories.)

William Welch, professor of pathology; Dr. William Osler, professor of clinical medicine, Dr. William Halsted, professor of surgery, and Dr. Howard Kelly, professor of gynecology and obstetrics.

The new school of medicine was a graduate school; the faculty felt that a sound liberal foundation was essential before the student attempted professional study.

Sir William Osler (1849–1919) was a Canadian who received his degree in medicine from McGill Medical School in Montreal. He spent two years studying medical practices abroad. In 1888 Dr. Osler, an eminent professor of clinical medicine, was appointed physician-in-chief of Johns Hopkins Hospital and taught clinical medicine at the patients' bedside. In 1891 he wrote his famous textbook, *Principles and Practice of Medicine.* It was due to Dr. Osler's efforts and inspiration that the Rockefeller Institute for Medical Research came into being in 1904.

William S. Halsted (1852–1922), in addition to being professor of surgery, was in charge of the surgical service at Johns Hopkins Hospital. He applied the principles of Lister's doctrine to his aseptic techniques of surgery. Many innovations in surgical procedures were due to his use of rubber gloves. Love rather than Lister was the motivating force behind the inception of rubber gloves as part of the operating room equipment. Scrubbing for surgery meant scrubbing and using the chemical solution of mercuric chloride. This proved injurious especially for the delicate hands of the operating room scrub nurse which were becoming precious to Dr. Halstead. In 1890, before Miss Caroline Hampton became Mrs. Halsted, Dr. Halsted consulted the Goodyear Rubber Company about the problem. Loose-fitting rubber gloves, easily boiled and most protective, were produced. Another first had been achieved for this century.

Still another milestone was reached when *women were readmitted* into the medical field. The well known pioneer was *Elizabeth Blackwell* (1821–1910). Elizabeth's struggles to gain admission to medical schools are well known. She was informed that she might as well lead a revolution as try to be a physician. Geneva Medical College in Geneva, New York, consented to admit her in 1847. After a bit of tribulation, she received her degree of doctor of medicine. Her troubles were just beginning because she was unable to secure a hospital staff appointment, and patients seemed disinterested in a woman doctor even though women midwives had been an accepted custom for years. Her desires of becoming a surgeon were exploded in 1851 when she contracted a severe eye infection while irrigating the eyes of a baby with a gonorrheal condition. (Neisser discovered the gonococcus in 1879.) Blindness in that one eye resulted. A woman physician with but one good eye was a catastrophe.

In 1853, Dr. Blackwell set up a dispensary, and in 1857 she was able to establish the New York Infirmary for Women and Children. This was to be the clinical setting for practical experience for women students of medicine. In 1865, she was responsible for founding the *Women's Medical College of the New York Infirmary for Women and Children.* The hospital was staffed by women doctors, and their service extended into the community. They employed a doctor to visit homes in order to care for the sick poor as well as a physician to give instruction to women on the subject of health, hygiene, and sanitation.

Dr. Blackwell was a close personal friend of Florence Nightingale, and they shared many interests and desires for the welfare of mankind.

In this century many devices, including the hypodermic syringe, the cystoscope, laryngoscope, and bronchoscope, were invented. These instruments were useful for diagnostic as well as therapeutic purposes. Many bacteria had been identified, and three ways of destroying bacteria by heat, chemicals, and vaccines were determined. The closing years of the nineteenth century were filled with important discoveries and developments in bacteriology and parasitology. Among the most outstanding events were the demonstrations of Ronald Ross of the malarial parasite in the mosquito, the use of serum against snake venom by Calmette, the explanation of the side-chain theory by Ehrlich, the use of ultraviolet light by Finsen, and the discovery of the transmission of yellow fever in the mosquito by Reed, Carroll, Lazera, and Agramonte in 1899.

The progress in medical biological, and physical sciences in this century has been beyond belief.

PROGRESS IN NURSING AND SOCIAL SCIENCE

The social reformers of the early nineteenth century had focused attention on the plight of the poor and on the needs for reform in prisons, hospitals, and nursing. Leadership in the social aspects of living and in nursing was needed. The person who responded to this exigency was *Florence Nightingale,* who cannot be considered as the product of her time but rather must be regarded as one of those rare and gifted people who transcend the period of their own existence and whose plans and accomplishments represent the thinking of a much later period of history.

Figure 197. One of Florence Nightingale's homes. (Courtesy of Lakeside Publishing Co.)

She was the contemporary of such gifted individuals as Pasteur, Lister, Koch, Roentgen, the Curies, Darwin, Mendel, Wordsworth, Byron, Shelley, Keats, Swinburne, Dickens, Longfellow, Emerson, Beethoven, Schubert, Mendelssohn, and Brahms.

Florence Nightingale (1820–1910) lived in the cramped society of the Victorian era. This was a period of growing unrest for women who longed for education and career opportunities. It was uncommon in this period for a woman of intellectual superiority and great wealth to be eager to assist the less fortunate and to be willing to work with the Sairey Gamps in the hope of replacing them with educated women.

The Nightingales were wealthy English people, cultured, remarkable for their sincerity and high ideals. Florence was born May 12, 1820, at Florence, Italy, and was named for that city; when she was a baby, however, her parents returned to England. For his daughters, her father advocated a wide education, a thing almost unheard of at that time, and Florence studied the classics and spoke Italian, French and German.

While still a little girl Florence nursed sick animals and at the age of nine said she would like to be "useful to sick persons." In her teens she visited the sick poor of her neighborhood and tried to help them. At the age of thirteen, she was horror-stricken at the revelation of the conditions of the poor when the Factory Bill was passed.

Figure 198. Mrs. Nightingale and her daughters Parthenope and Florence.

When she was twenty, Florence Nightingale asked her parents to let her go into a hospital and learn to be a nurse. The parents knew the conditions that existed in the hospitals of the day and refused to think of such a thing. Florence would not go without their consent and grieved over their view of the matter. Always deeply religious, she believed that she could best serve God by serving humanity. Once she told her sister, "I look to thirty as the age when our Saviour took up His work. I am trying to prepare myself to follow in His footsteps."

An important contact between Florence Nightingale and a gentleman in the United States had a profound influence on her decision to pursue the life of a nurse. In 1844, Dr. Samuel Gridley Howe and his wife, Julia Ward Howe, were visiting the Nightingale family at their summer estate at Embley in Hampshire. Florence, at the age of twenty-four, was undergoing a particularly frustrating experience of wanting to be useful to humanity, instead of being waited upon as was this wealthy young lady. She turned to Dr. Howe for counsel:

> "Dr. Howe, you have had much experience in the world of philanthropy; you are a medical man and a gentleman; now may I ask you to tell me, upon your word, whether it would be anything unsuitable or unbecoming to a young English woman, if she should devote herself to work of charity in hospitals and elsewhere as the Catholic Sisters do?"
>
> "My dear Miss Florence," Dr. Howe replied, "it would be unusual, and in England whatever is unusual is apt to be thought unsuitable; but I say to you, go forward, if you have a vocation for that way of life; act up to your aspiration, and you will find that there is never anything unbecoming or unladylike in doing your duty for the good of others. Choose your path, go on with it, wherever it may lead you, and God be with you!"[2]

This auspicious occasion has been described by Mrs. Howe in her *Reminiscences* and by their daughter, Laura E. Howe Richards, in two of her books. This discussion seemed to have had a catalytic effect on the inner desires of Florence Nightingale and prompted the action she took later.

Figure 199. Florence Nightingale.

When she was twenty-four, Florence had definitely decided that nursing was to be her work. Her family still did not sympathize but tried to make her see that marriage and social life were woman's proper sphere. She had several offers of marriage, but felt that she could not do the work to which she had been called by God if she married. For years her parents tried, by travel and social life, to distract their daughter from her purpose. She met many prominent and brilliant people both in England and on the continent. Florence was attractive, tall and graceful; she also was reserved, and had a keen sense of humor, impressing one as being too serious for her age and station in life.

In her trips on the continent, Florence Nightingale had visited and observed hospitals in France, Germany, Belgium and Italy having seen those of Great Britain. She desired to establish a sort of Protestant sisterhood, not unlike a deaconess order, in which educated women could devote their lives to nursing. She knew of the work of Amalie Sieveking, Elizabeth Fry and Theodor Fliedner, and she longed to go to Kaiserswerth for training. She confided this to Dr. Elizabeth Blackwell, the first woman to graduate in medicine in America, who encouraged her.

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[2] Bishop, William J.: "Florence Nightingale's Message for Today." *Nursing Outlook, 8;* 246–247, 1960.

Her family, though still opposing her, permitted Florence to stop at Kaiserswerth for a two weeks' visit, and in 1851, when she was thirty years old, she enrolled for three months' training. There she realized her dream of practical instruction in nursing, and while she found much to criticize, she knew it was the best training to be had. Fliedner doubted her persistence in the hard work, but Florence did her share of everything.

After this, she spent some time in Paris, working with the Sisters of Charity and seeing the work of brilliant French surgeons. When she was thirty-two, her family despaired of her marrying, and finally permitted her to take her life into her own hands. Her father gave her an allowance of $2500 a year.

Miss Nightingale's first position was superintendent of the *Establishment for Gentlewomen During Illness.* She planned for the patients and the doctors with great skill, and was successful and happy. Within a short time she was asked to become superintendent of nurses at King's College Hospital, and had begun to plan her work there when the call came to go to the *Crimea.*

Russia was now at war with the combined forces of England, France and Turkey. Russia and France had religious sisters to care for their armies, but England had only untrained men to care for the sick and wounded. It soon became evident that the army medical system was inefficient, and that because of division of responsibility, slowness in implementation of policy, and lack of nurses, the men were neglected and suffering, and the whole matter was a national disgrace. During the Crimean War, a newspaper reporter gave the first direct accounts of wartime conditions to be published. Prior to this war, the general simply gave out the report of success or failure. Now a vivid picture of conditions for the poor soldier was realized by the public. The English people demanded that something be done.

An appeal for nursing assistance came to Florence Nightingale as a call from God. It was the opportunity she had been waiting for—a chance to serve humanity and her country and she wrote to the Hon. Sidney Herbert, the Secretary of War whom she knew personally, and offered her services.

Before Mr. Herbert received her letter he had decided that Florence was the one person in England to take this assignment, and he had written her asking her to undertake it. "Your own personal qualities, your knowledge, your power of administration, your rank and position in society give advantages which no other person possesses. Upon your decision will depend the success or failure of the plan." Miss Nightingale accepted the appointment.

In a week's time, on October 21, 1854,

Figure 200. Sidney Herbert (Bihet, *Histoire du Nursing.*)

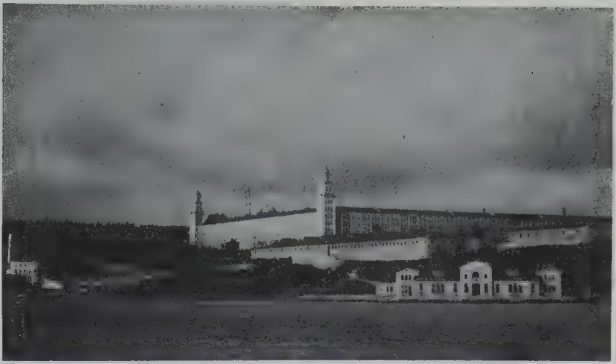

Figure 201. Nightingale Barracks Hospital at Scutari, as seen from the American Hospital, Constantinople, 1927. (Courtesy of International Council of Nurses.)

Florence Nightingale had chosen her nurses and was ready to set out. She had in her group Roman Catholic and Anglican sisters, lay nurses from St. John's House and others, thirty-eight in all.

Many of the medical officers of the Army were opposed to the idea of women nurses. They felt that the nursing care given by untrained orderlies was as good as could be expected in war, and that women would be burdensome.

Miss Nightingale and her band were assigned to the base hospital at *Scutari,* across the strait from Constantinople (now Istanbul). Here, in a beautiful setting was the great Barracks Hospital, supposed to accommodate 1700 patients. At that time there were between three and four thousand sick and wounded, and *four miles of beds.* Miss Nightingale and her thirty-eight nurses were given charge of 1500 patients.

The *hospital conditions* were indescribably poor. The crowded wards had unspeakable toilet and sanitary accommodations. There were not enough beds, and those existing were of straw. Many patients lay on the floor. There were few sheets, practically no hospital clothing and most of the patients were still in their uniforms, stiff with blood and covered with filth.

There were no basins, few utensils of any sort, no soap, no towels. There were no knives nor forks, so that the men ate with their fingers. It took four hours to serve a meal, and most of it was not edible. There was practically nothing which a very sick man could eat. There was no night nursing; the men, left alone in the dark, spoke of the terror of it. With these conditions, the death rate was *42 per cent.*

The nurses' own quarters were small and dirty and swarming with rats and vermin. The nurses had to take their meals in their barracks, as no other place was provided.

Miss Nightingale began by opening five diet kitchens and fitting up a laundry. At the Barracks Hospital in Scutari, a missionary from New England, *Cyrus Hamlin,* contributed his services by baking bread and washing clothes for Miss Nightingale.[3] She had been told that there were plenty of supplies, but they could not be found; some had been sent to wrong ports, and some were buried under munitions. Using her own funds for emergencies, she asked friends at home to provide more.

In two months she had transformed the hospital into an efficiently managed institution. In six months she had reduced the death rate to *2 per cent,* and had won the respect of most of the surgeons; Lord Raglan, the Commander-in-Chief, gave her his cordial support. Because of her sanitary improvements and the provision of good nursing care for patients, Miss Nightingale reduced the mortality rate from 427 per thousand in February 1855 to 22 per thousand in June 1855. She utilized the scientific method of gathering data and was skilled as a statistician, presenting the factual evidence in a most graphic way. Dr. C.E.A. Winslow[4] referred to her as the "Lady with the Slide Rule," as well as a lady provided with the lamp of compassion and the broom of efficiency.

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[3] Widmer, Carolyn L.: "Grandfather and Florence Nightingale." *American Journal of Nursing, 55:*569–571, 1955.

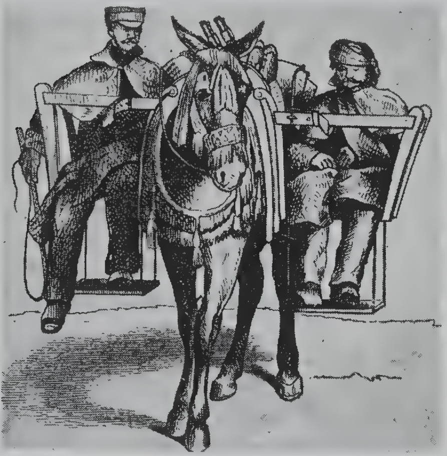

Figure 202. Front view of the mule chair used in the Crimean War. (Ciba Symposia, 1947.)

Inevitably, the soldiers loved her. One of them wrote home, "What a comfort it was to see her pass! She would speak to one and nod and smile to many more. She could not do it to all, you know, for we lay there by hundreds, but we could kiss her shadow as it fell and lay our heads on the pillow again content. Before she came there was much cursing and swearing, but after that it was as holy as a church."

It was her night rounds which gave her the title of *The Lady of the Lamp.* A correspondent wrote, "When all the medical officers have retired for the night, and silence and darkness have settled down upon those miles of prostrate sick, she may be observed with a little lamp in her hand making her solitary rounds. As her slender form glides through the corridor, every poor fellow's face softens with gratitude at the sight of her." Longfellow's poem, *Santa Filomena* says:

> Lo, in that house of misery, a lady with a lamp I see
> Pass through the glimmering gloom and flit from room to room.

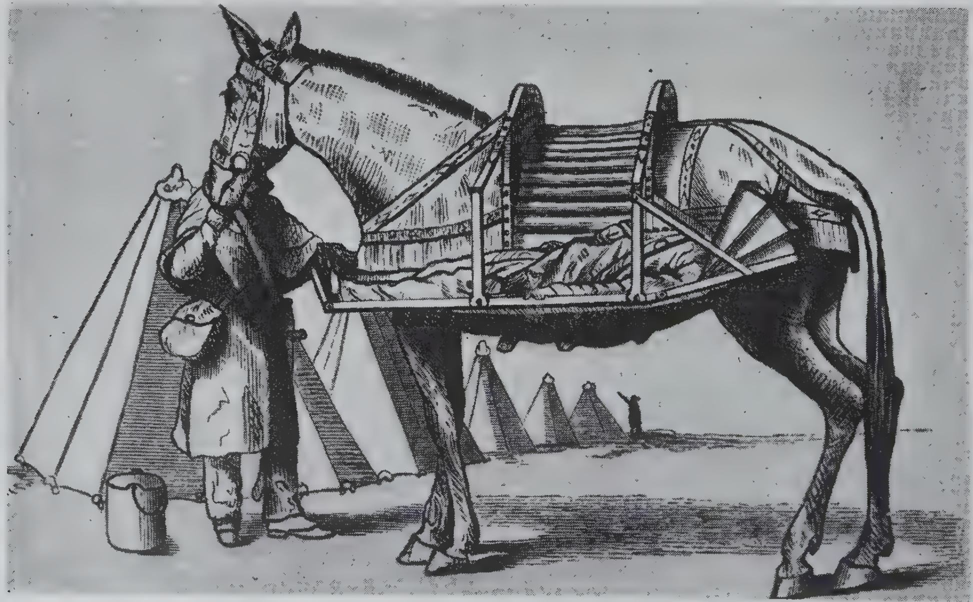

Figure 203. Side view of the mule chair, or cacolet, attached to its pack-saddle, used in the Crimean War. (After Longmore, Ciba Symposia, 1947.)

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[4] Winslow, Charles-Edward A.: "Florence Nightingale and Public Health Nursing." *Public Health Nursing, 46:*331, 1946.

And slow, as in a dream of bliss, the speechless
sufferer turns to kiss
Her shadow as it falls upon the darkened walls.

The Irish Sisters of Mercy, fifteen of whom had come about the same time as Miss Nightingale, were working in Kulelie hospital near by. Conditions were similar, and the sisters had great difficulty in getting supplies or food for their patients. One of them wrote, "The hospital consists of long corridors as far as the eye can reach, with beds at each side; also poor soldiers, both wounded and frost-bitten, lie on the floor. . . . The men had only thin linen suits for a Crimean winter. . . . We are in the wards early and late. When we go to take two hours rest, we groan at the thought of what we leave undone."

A War Office report said of them, "The superiority of an ordered system is beautifully illustrated in the Sisters of Mercy. Their intelligence, delicacy and conscientiousness invest them with a halo of extreme confidence. One can safely consign his most critical cases to their hands."

The next summer, when the work was lighter, Miss Nightingale went with some of the Catholic sisters to the Crimea itself. There she contracted Crimean fever, probably typhus, and was desperately ill. The soldiers wept when they heard that she was ill. England anxiously awaited the outcome. Not giving herself time for proper convalescence, Florence went back to Scutari.

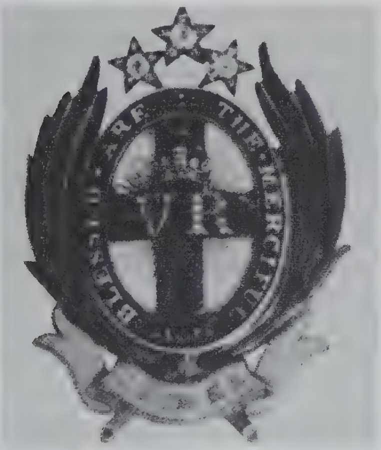

Figure 204. The Cross of St. George, bestowed upon Florence Nightingale by Queen Victoria.

Early in 1856 peace was concluded, the hospitals were closed one by one and the nurses went back, Miss Nightingale last of all, returning in July, 1856. By now she had become the popular heroine. Her name became a synonym for gentleness, efficiency and heroism. Despite her retiring disposition, and her efforts to escape publicity, many honors were bestowed on her.[5]

Florence Nightingale's war work encompassed far more than reorganizing nursing and saving lives. It had broken through the age-old prejudice against women in the army, and it led in the end to a new attitude toward nursing and the establishment of a new occupation for women.

Sidney Herbert also had a plan for what might be done to raise the status of nursing. When there was a movement to honor Miss Nightingale in some permanent way, he suggested a *Nightingale Fund* for the training of nurses. Many prominent persons contributed to it, the British soldiers out of their pitifully small pay giving one tenth. The fund amounted to £40,000 ($200,000). Since the project was the fulfilment of her dearest wish, Miss Nightingale readily accepted the task of administering the fund.

THE NIGHTINGALE SCHOOL FOR NURSES

Miss Nightingale was far from well when she returned to England, yet she did

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[5] Queen Victoria and the Sultan of Turkey had given her beautiful jewels which she wore occasionally in Scutari to please the soldiers, but never at home.

Figure 205. Florence Nightingale wearing the Cross of St. George.

not take time to rest. The *Nightingale School for Nurses* was opened four years later in *1860.* It was the first fully endowed school of nursing and was economically independent of the hospital. *St. Thomas' Hospital in London* was selected as the clinical setting for this new scheme of preparing educated nurses. Florence Nightingale's personal philosophy of living permeated the entire curriculum of her school. It was her belief that God wanted men to teach other men as well as continue to grow themselves. Health was essential: health of soul as well as body. Self discipline was important as was self evaluation. Her curriculum did not stress adjustment to a standard set of goals, but rather encouraged the development of every individual. Miss Stewart[6] presented this concept of Miss Nightingale's in terms of individual differences. Every individual has some talent or ability to add to the enrichment of humanity. She stated, "We cannot put into you what is not there. We want to bring out what is there. Training is enabling you to use the means you have in yourselves."

Miss Nightingale's emphasis was on the positive. She insisted that *nursing was helping people to live* while training was to teach the nurse to help the patient to live. Nursing the sick, she felt, was an art, and an art requiring an organized, practical, and scientific training; for nursing was the skilled servant of medicine, surgery, and hygiene. Her concept was that nursing was the necessary corollary of these broader fields because she did not say the skilled servants of physicians, surgeons, or health officers. The nurse should adapt her unique skills in a team relationship for the welfare of patients. Her training must have fitted her to obey intelligently, using discretion.

As for the care of the patient, Miss Nightingale emphasized that "a patient wants according to his wants, and not according to any nurse's theory of his wants." In addition, the *sick person* must be treated and not the disease; that prevention was better than cure; and that nursing must retain its ideals but must be willing and able to change its methods.

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[6] Stewart, Isabel M.: *The Education of Nurses.* New York, The Macmillan Co., 1953, p. 46.

The *aims* of the *Nightingale School* were to train hospital nurses; to train nurses to train others; and to train district nurses for the sick poor. The length of the program was one year. The size of the classes was small, which permitted a high degree of selectivity—between 1000 to 2000 applications were received but only fifteen to thirty students were admitted.

Of the two classes of students admitted, one was made up of educated probationers from the upper stratum of society. This class paid a tuition fee. The other group of students was not required to pay a fee; their expenses were taken care of by the Nightingale Fund.

In 1875, a home sister or clinical instructor was appointed. She was *Miss Mary Crossland* who appears to have done a creditable piece of work in planning a program of clinical instruction. Her efforts have been preserved in the letters which she wrote to Miss Nightingale of her progress. Her enthusiasm inspired several doctors to join in taking the students on clinical rounds. Mrs. Seymer[7] gives an example from a letter written on November 8, 1879:

> Mr. Croft gave us rather a new style of clinical lecture this morning—some had expressed a desire to understand about aneurisms—so instead of beginning to tell, Mr. Croft asked questions: asked Miss G. if she had ever come across a case in the wards. She had, in a Medical ward. He then asked her to state what she had observed about the case, such as symptoms of pain, difficulty of breathing—cough—position of patient—diet—treatment, to all of which she gave good answers. Then Mr. Croft explained the cause of the different symptoms—the effect of diet and treatment and what share a nurse had in seeing the treatment was carefully carried out.

As early as 1867, Miss Nightingale's contractual agreements included: In addition to her salary received from the hospital, the ward sister (head nurse) was paid by the Nightingale Endowment Fund for assisting in the training of the students. The medical instructors were to be paid in a similar fashion. The head nurses were to keep weekly summary records of the work of each student while the matron recorded monthly summaries. Students were to keep diaries of their educational experiences. The students were to be taught to detect symptoms and the reasons for these symptoms and were to be given sufficient time to understand the reasons. She stressed the need for guidance for the learner.

Miss Nightingale in her *Suggestions for the Improvement of the Nursing Service of Hospitals* inveighed against using nurses for cleaning and scrubbing. Her words were: "A nurse should do nothing but nurse. If you want a charwoman, have one. Nursing is a specialty." It was her feeling that the hospital environment should encourage the nurse to nurse rather than to frustrate and thwart her efforts. Premature responsibility and overwork were recognized as dangers to sound growth and frequently encouraged the student to become disinterested in nursing. She encouraged step savers such as hot water piped up to the patient's floor; a lift or elevator to bring up the patient's food; a system of bells with valves that flew open and remained open until nurses could detect which patient needed her; a nursing environment that keeps pace with progress; and an attitude of willingness on the part of the matron (director of nursing service) to see that nothing prevented the students from nursing. Her brilliant mind could not envision anything stereotyped or inflexible. For this reason, she did not approve of graduation for she stated: "Nursing is a progressive art in which to stand still is to have gone back." To have the idea that one had mastered a field of learning was abhorrent to her who said: "Progress can never end but with a nurse's life."

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[7] Seymer, Lucy R.: "Mary Crossland of the Nightingale Training School." *American Journal of Nursing, 61*:86, 1961.

Refresher courses were recommended by Miss Nightingale to keep nurses up to date in their field.

Miss Nightingale's plans met with opposition, chiefly from doctors. Of a hundred doctors whose opinion was asked, only four favored the idea. They themselves had given the nurses at St. Thomas' their training, and felt it was very good. One said, "Nurses are in much the same position as housemaids, and need little teaching beyond poultice-making and the enforcement of cleanliness and attention to the patient's wants." Another doctor said publicly, "A nurse is a confidential servant, but still only a servant. . . . She should be middle-aged when she begins nursing; and if somewhat tamed by marriage and the troubles of a family, so much the better."

A few doctors understood what the movement might mean. One said, "A trained and educated nurse would soon become most popular and trusted. She would cooperate with the physician, her presence would inspire confidence in the patient, and she would restore peace and order to a distracted household."

It was hoped that Miss Nightingale would take charge of the school, but her health was not equal to it. At this time she rarely went out, though she saw many persons on business relating to hospitals or nursing. It was very difficult to get an appointment with her, and could be done only if she were convinced that the one who sought it was in earnest. *Mrs. Wardroper,* who had been for some years at St. Thomas' and had used the untrained personnel, was chosen to take charge. For many years, however, Miss Nightingale selected the students and advised on details.

Miss Nightingale herself, keen at judging character, chose the students for their personal qualities as well as for their ability. They were required to read and write *well.* Those who saw the early Nightingale nurses were impressed with "the bright, kindly and pleasant spirit which seemed to pervade them." The ward "sisters," *i.e.,* those in charge of departments or wards,

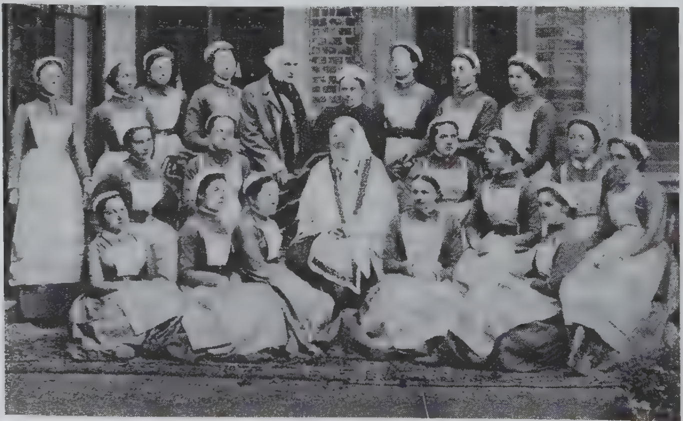

Figure 206. Miss Nightingale and nurses of St. Thomas' Hospital, London, 1887. (Original in possession of St. Thomas' Hospital. Published in cooperation with the *Nursing Times* and with the approval of Miss Lloyd-Still, Miss Nightingale's successor at St. Thomas'.)

were chosen, and have continued to be chosen, for their teaching ability, and were expected to instruct the students on the wards. Miss Nightingale insisted that students be taught *why* things were so, and that they be given *time* to learn.

Their program was designed less for private duty than for executive positions in hospitals. Miss Nightingale seems to have foreseen that they would be needed in other countries; they became the pioneer heads of nurses' training in Scotland, Germany, Norway, Sweden, Canada, the United States and even as far away as South Africa, India and Australia.

Despite its founder's prestige, the school faced many difficulties in its first ten years. Only one by one were the doctors convinced, and slowly the public came to see what an educated nurse meant.

Miss Nightingale came to be *adviser-in-general* in hospital and nursing matters not only to the United Kingdom but to the whole world. She was called upon to criticize plans, to advise in hospital construction, equipment, management, in questions of policy and in every new phase of nursing. Most of those who organized the first schools in America consulted her. Throughout her whole long life there was hardly a move of any importance made in the nursing world in which she did not have a part.

Even before she founded the Nightingale school, Miss Nightingale began plans for the betterment of conditions in the British Army, which she considered her chief work. While at Scutari she had established clubs for the soldiers; she now recommended educational facilities, recreational arrangements and especially attention to their health. (In peacetime the army death rate was twice that of civilians.) Her plans were accepted and gradually put into practice, and other nations adopted them, though few knew their source. Miss Nightingale's next project concerned the enormous subject of sanitation for India, and for forty years she devoted much time to it. She developed a health program, a project such as no woman and few men have planned, for the millions of India's population. Her name never appeared in this work, but it was carried out by the Royal Commission.

Politically, she was personally acquainted not only with the Queen and her Cabinet, but with every Prime Minister of her time, and many of the royalty of other nations. Eminent men came to her for advice.

She was an advocate of equal suffrage. She said, "I am convinced that political power is the greatest it is possible to wield for human happiness, and until women have their part in it in an open, direct manner, the evils of the world can never be satisfactorily dealt with." She opposed registration for nurses, and prevented the passage of a registration act in Great Britain for many years.

In 1859 Miss Nightingale published *Notes on Hospitals,* considered the most valuable work of its kind. Before her time hospitals had imposing and beautiful buildings, but lacked all things pertaining to the comfort of the patients. Her practical mind and deep sympathy made her persevere until she convinced some that sanitation and convenience are more important than architecture. Her book, *Notes on Nursing,* has been an invaluable aid for all nurses. A few quotations from it are worth studying.

> The suffering considered to be due to disease is often not disease at all, but due to want of fresh air, of warmth, of cleanliness, of quiet, of care in the administration of food.
>
> Volumes are written upon the effect of the mind upon the body. I wish that more thought was given to the effect of the body upon the mind.
>
> Merely looking at the sick is not always observing. It needs a high degree of training to look so that looking shall tell the nurse aright. A conscientious nurse is not

> necessarily an observing nurse, and life or death may lie with the good observer.
>
> The matron[8] should be one whose desire is that her students shall learn—a rarer thing than is usually supposed. . . . The nurses must really be the matron's children. . . .

Her published writings numbered over one hundred, nearly all on hospital, nursing or sanitary matters.

Miss Nightingale's rare union of qualities of head and heart, her ability to attend to details without losing sight of fundamentals, and her wide knowledge and experience fitted her to speak with authority on the *principles of nursing education.*

Florence Nightingale died in August, 1910, at the age of ninety. Her family was asked to allow her to be buried in Westminster Abbey, but they knew her wishes and refused. Her grave is in the family plot at East Wellow, near Romney, in Hampshire, and its only mark is a small cross with her initials and dates. (There are monuments to her in London, Derby, Milbank, in Florence and in Calcutta, India, and beautiful memorials in St. Paul's Cathedral, London and at St. Thomas' Hospital.)

Florence Nightingale had raised the status of nursing to a dignified occupation, improved the quality of nursing care and

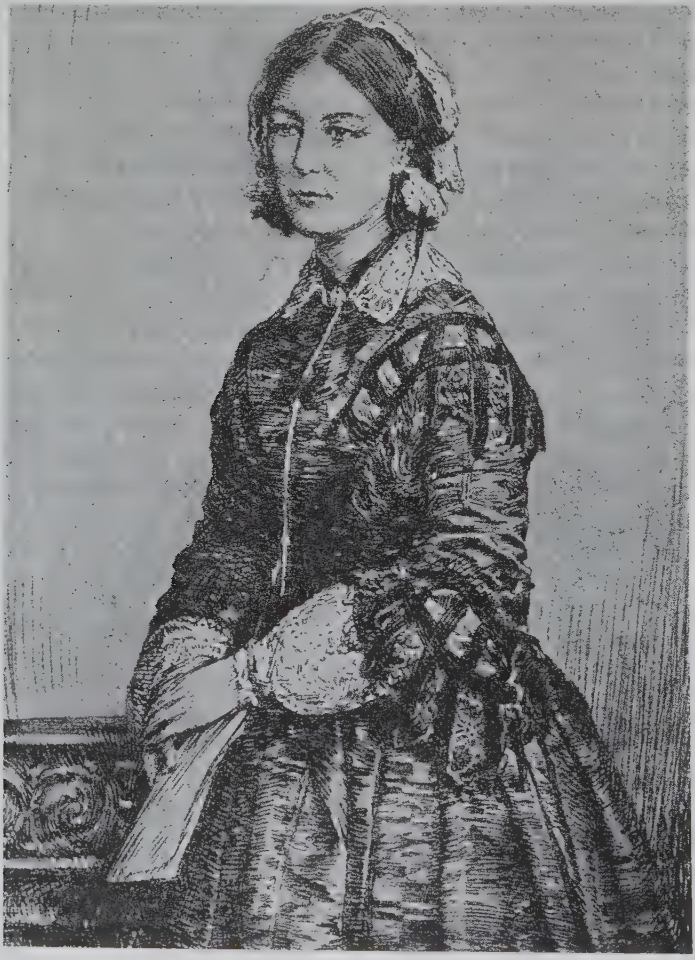

Figure 207. Florence Nightingale.

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[8] Director of nurses.

was the founder of modern nursing education.[9]

She was not a submissive, sweet, smiling, quiet person but a gifted, brilliant, dynamic, forceful leader whose thoughts and desires were channeled into active results. She was extremely intelligent, well educated, and was recognized as such by many scholars of this period. Her ideas of nursing and plans for it have not yet been fully recognized or realized.

THE CIVIL WAR OR THE WAR BETWEEN THE STATES—1861–1865

On April 14, 1861, when *President Lincoln* summoned 75,000 volunteers for the Union Army, there were no army nurse corps, no organized medical corps, no ambulance or field hospital service.

Members of many religious orders volunteered promptly and gave superior care to soldiers in their own hospitals, in army hospitals as well as on the battlefield. One form of recognition of their outstanding contribution to both the Union and Confederate troops in this war effort was the erection of the memorial monument, "Nuns of the Battlefield," in Washington, D.C. This remains a tribute to the nearly 600 sisters of twelve religious orders who served so heroically during this crucial period. Sisters came from the following orders and locations:

Sisters of Charity, Nazareth, Kentucky; Sisters of Charity, Mount Saint Vincent-on-Hudson, New York City; Sisters of Charity, Mount St. Joseph-on-Ohio, Cincinnati, Ohio; Daughters of Charity of St. Vincent de Paul, Emmitsburg, Maryland; Sisters of St. Dominic, Springfield, Kentucky; Sisters of St. Dominic, Memphis, Tennessee; Sisters of the Poor of St. Francis, Cincinnati, Ohio; Sisters of the Holy Cross, Notre Dame, Indiana; Sisters of St. Joseph, Philadelphia, Pennsylvania; Sisters of St. Joseph, Wheeling, West Virginia; Sisters of Mercy, Pittsburgh, Pennsylvania; Sisters of Mercy, New York City; Sisters of Mercy, Chicago, Illinois; Sisters of Mercy, Baltimore, Maryland; Sisters of Mercy, Vicksburg, Mississippi; Sisters of Mercy, Cincinnati, Ohio; Sisters of Our Lady of Mercy, Charleston, South Carolina; Sisters of Our Lady of Mount Carmel, New Orleans, Louisiana; Sisters of Providence, St. Mary-of-the-Woods, Indiana; Sisters of St. Ursula, Galveston, Texas.

The nursing of some of the largest government hospitals was assigned to them. "There was an immense enthusiasm among the laity, but a total lack of experience and efficient organization. . . . The first hospitals were mostly empty barns or warehouses . . . but in the hands of the Sisters they became finally a model for European military sanitation."

All the Catholic nursing sisters because of their efficiency received many compliments from the government. Jefferson Davis paid them highest tribute and Abraham Lincoln gave them permission to purchase all supplies needed for their work. The sisters neither asked for nor received any compensation for their labors.

Yet these hundreds of devoted sisters were not enough to care for so many

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[9] There are two additional ways for the student to enlarge her understanding of Florence Nightingale:

1. Obtain a copy of the bulletin of the Columbia-Presbyterian Nightingale Collection which has been catalogued. (Copies available from the Alumnae Association, Presbyterian Hospital School of Nursing, 622 West 168th Street, New York 32.)
2. Consult the Nightingale bibliography being compiled under the aegis of the Florence Nightingale International Foundation, the nursing education division of the International Council of Nurses in London.

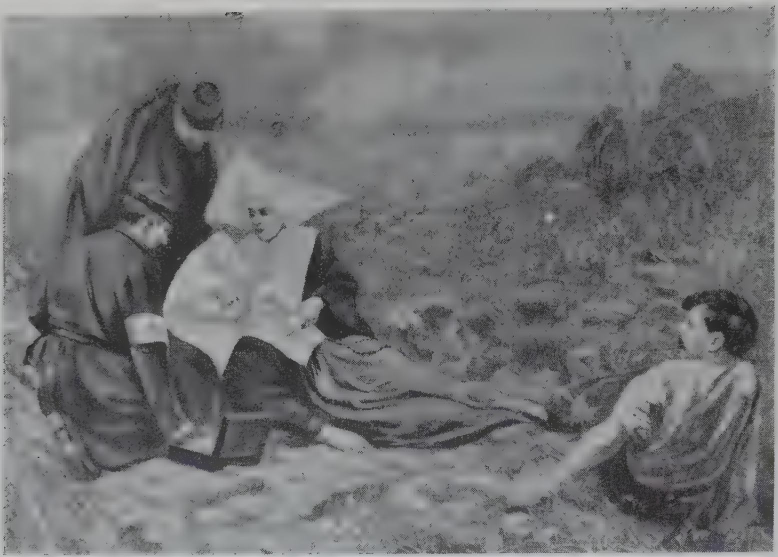

Figure 208. The Innocent Victim. A Sister of Charity killed on a Civil War battlefield while ministering to the wounded.

wounded and sick. Hundreds of lay women were needed to supplement them.

Outside of the religious orders, there were almost no other nurses with any real training. Women did request permission to be of assistance, and two such women were Clara Barton and Mother Bickerdyke.

Clara Barton (1821–1912), of North Oxford, Massachusetts, was given the name of Clarissa Harlowe, but later changed it to the simpler one by which she has been known and remembered.

When the Sixth Massachusetts Regiment arrived in Washington on April 19, 1861, she was there to dress the wounds of the men and feed them. Another project she undertook was supervising the shipment of field supplies in the wagon train which had been sent down for the soldiers. It is recorded that on one of her journeys with the wagon train, a herd of cattle to be used for food for the army was being driven ahead of the train. As this wagon train passed a Confederate hospital, the surgeon begged for assistance for his patients who were starving. The officer in charge of the cattle asked Miss Barton, "What can I do? I am a bonded officer and responsible for the property in my charge." "You can do nothing," she replied, "but ride on ahead. I am neither bonded nor responsible." Soon an ox was extricated from the herd and went to the grateful surgeon of the Confederate army. Clara Barton gave devoted service to our soldiers in a time of dire need.

Mary Ann Bickerdyke (1817–1901), affectionately called *Mother Bickerdyke,* responded to an urgent plea by her minister, Henry Ward Beecher (the brother of Harriet Beecher Stowe) for some women in his congregation to go to the government hospitals and battlefields and care for the sick and wounded. She was a dynamic but lovable woman who gave the soldiers very good care. Mother Bickerdyke had taken Dr. Hahnemann's short course in homeopathy and received a degree of Doctor of Botanic Medicine.[10] This background was useful in her nursing care of the wounded. Her efforts were remem-

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[10] Baker, Nina B.: *Cyclone in Calico.* Boston, Little, Brown & Co., 1952, pp. 18–20.

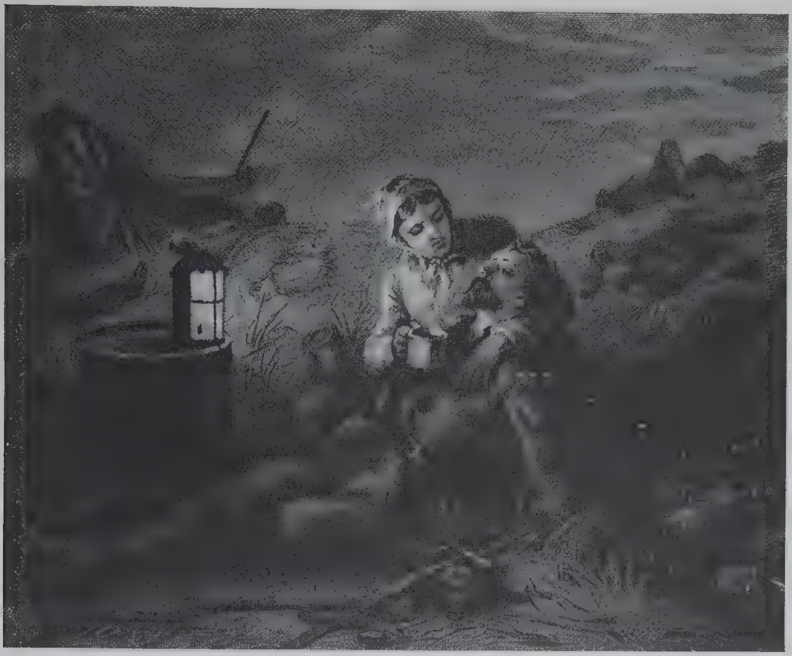

Figure 209. Mother Bickerdyke searching the battlefield at midnight to comfort the neglected or forgotten patient.

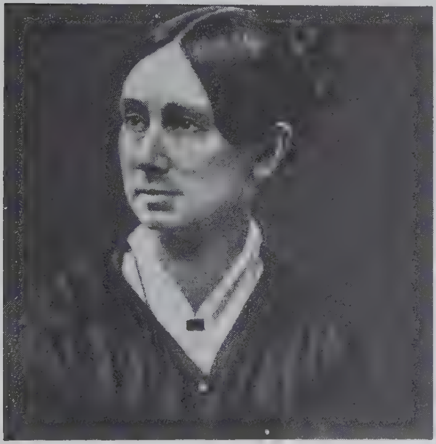

Figure 210. Dorothea Lynde Dix. (Courtesy of *The Trained Nurse and Hospital Review.*)

bered by the government when they launched the hospital ship, the S.S. *Mary A. Bickerdyke,* at Richmond, California, in 1943.

Although there were women such as these two outstanding persons, there was still a need for more nurses. The public had been stimulated by the newspaper accounts of the medical treatment at some military camps, of the lack of care for sick soldiers at these centers, of the insufficiency of supplies, of such inadequate transportation that surgical dressings or drugs were absent when most needed.

On June 10, 1861, *Dorothea Lynde Dix* was appointed *Superintendent of the Female Nurses of the Army.* From the Secretary of War, she was given the responsibility and authority to recruit and equip a corps of army nurses.

Document 213
To Volunteer Nurses
War Department, Military Hospital

Be it known to all whom it may concern that the free services of Miss D. L. Dix are accepted by the War Department, and that she will give at all times all necessary aid in organizing military hospitals for the care of all sick and wounded soldiers, aiding the chief surgeons by supplying nurses and substantial means for the comfort and relief of the suffering; also, that she is fully authorized to receive, control and disburse special supplies bestowed by individuals or associations

> for the comfort of their friends or the citizen soldiers from all parts of the United States.
>
> Given under the seal of the War Department this twenty-third day of April, in the year of our Lord one thousand eight hundred and sixty-one, and of the independence of the United States the eighty-fifth.
>
> S/Simon Cameron
> Secretary of War.

Military rank, so very important, was not given to her or the members of her corps. Miss Dix did not have a background of nurse's training as Miss Nightingale did, but she had established a record of organizational skill in her previous humanitarian achievements.

The qualifications of the army nurses stated that the women who were recruited must be over thirty years of age and preferably thirty-five; must be plain-looking women; must be dressed in brown or black with no ornamentation—no bows, no curls, no jewelry, and no hoop skirts. Miss Dix soon had two thousand capable, enthusiastic women ready to serve the armed forces. Women from all parts of the country offered their services. One of the better known personalities was Louisa May Alcott.

Louisa May Alcott (1832–1888) was the daughter of a famous father, Bronson Alcott, whose altruistic motives prompted the Transcendental Movement, and who sent "his only son to war" as he stated. She cooled feverish brows, smoothed rumpled beds, soothed the fears of the twelve-year-old drummer boy and recorded her efforts in letters sent to her family and signed Nurse Periwinkle. Later, her letters appeared in *Hospital Sketches,* published in 1863. She wrote:

> Up at six, dress by gas light, run through my ward and throw up the windows, though the men grumble and shiver. But the air is bad enough to breed a pestilence . . . till noon I trot, trot, trot, giving out rations, cutting up food for helpless "boys," washing faces, teaching my attendants how beds are made or floors are swept, dressing wounds. . . . At twelve comes dinner for patients and afterward letter writing for them or reading aloud. . . . Supper at five sets everyone running who can run. . . . Evening amusements. . . . Then, for such as need them, the final doses for the night.

She reported that she "ministered to their minds by writing letters" to their families for them. She noted that many boys wore bags of camphor around their neck for protection against disease.

Her common sense and ability to protest against lack of organization in nursing service was displayed when she registered disapproval of using convalescents as attendants. She deplored not having enough help or the right kind:[11]

> If any hospital director fancies this a good and economical arrangement allow one used up nurse to tell him it isn't, and beg him to spare the sisterhood who sometimes in their sympathy, forget that they are mortal, and run the risk of being made immortal, sooner than is agreeable to their partial friends.

Walt Whitman (1819–1892) has left a monumental record of the care of the sick during the Civil War in his collection of poems, *Drum-Taps,* and in *Specimen Days,* his diary, which contained vivid descriptions of his experiences as a hospital nurse in Washington. His younger brother George enlisted in the Thirteenth Regiment. When news reached Walt that his brother had been wounded, he rushed to Fredericksburg, Virginia, to be of assistance. His sensitive nature was so moved that he was unable to leave the sick. His major role was not so much to meet the physical needs as to meet the psychological ones. The emotional trauma suffered by these heroic soldiers could only be understood and appreciated by those who witnessed the tragedy.

He was a familiar figure wandering from ward to ward passing out books and other comforts, offering to listen to the boys, and to write letters for them. He used his literary talents to expose the inefficiency and negligence that he noted as

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[11] Alcott, Louisa M.: *Hospital Sketches.* Boston, James Redpath, 1863, p. 74.

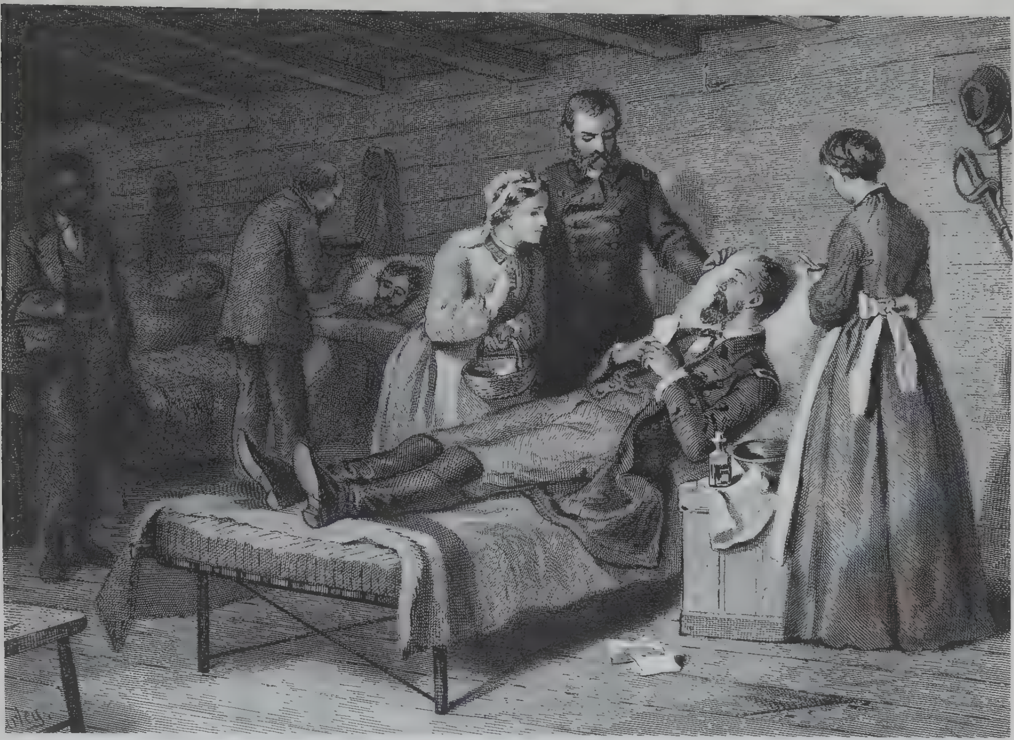

Figure 211. The Dying Soldier—The Last Letter from Home.

he observed the military procedures. His objective in these articles was to move the indifferent public. He played a dual role of war correspondent as well as nurse. His abilities in the presentation of the sufferings of men and his efforts in their behalf are set forth in "The Dresser:"

Bearing the bandages, water and sponge,
Straight and swift to my wounded I go,
Where they lie on the ground after the battle brought in,
Where their priceless blood reddens the grass, the ground,
Or to the rows of the hospital tent, or under the roof'd hospital,
To the long rows or cots up and down each side I return,
To each and all one after another I draw near, not one do I miss, * * *
I onward go, I stop,
With hinged knees and steady hands to dress wounds,
I am firm with each, the pangs are sharp yet unavoidable,
One turns to me his appealing eyes—poor boy! I never knew you,
Yet I think I could not refuse this moment to die for you, if that would save you.

On the Confederate side in the South, religious sisters and lay women gave heroic service. The Confederate Army did not appoint a director of nursing, but *President Jefferson Davis* bestowed the rank of *Captain* on a most deserving candidate, *Miss Sally Tompkins.* Miss Tompkins was a well-to-do young Southern lady who was active in the charitable works of her church. She had taken care of many sick persons so that after the battle of Bull Run when Judge Robertson had offered the use of his home as a hospital, she was placed in charge of it. When private hospitals were ordered closed, she begged President Jefferson Davis to intercede for the soldiers and her hospital, and the Robertson hospital was not closed. She refused the customary remuneration but accepted food, medicines, and other supplies in lieu of salary.

The nursing care given by Miss Tompkins must have been of a superior quality

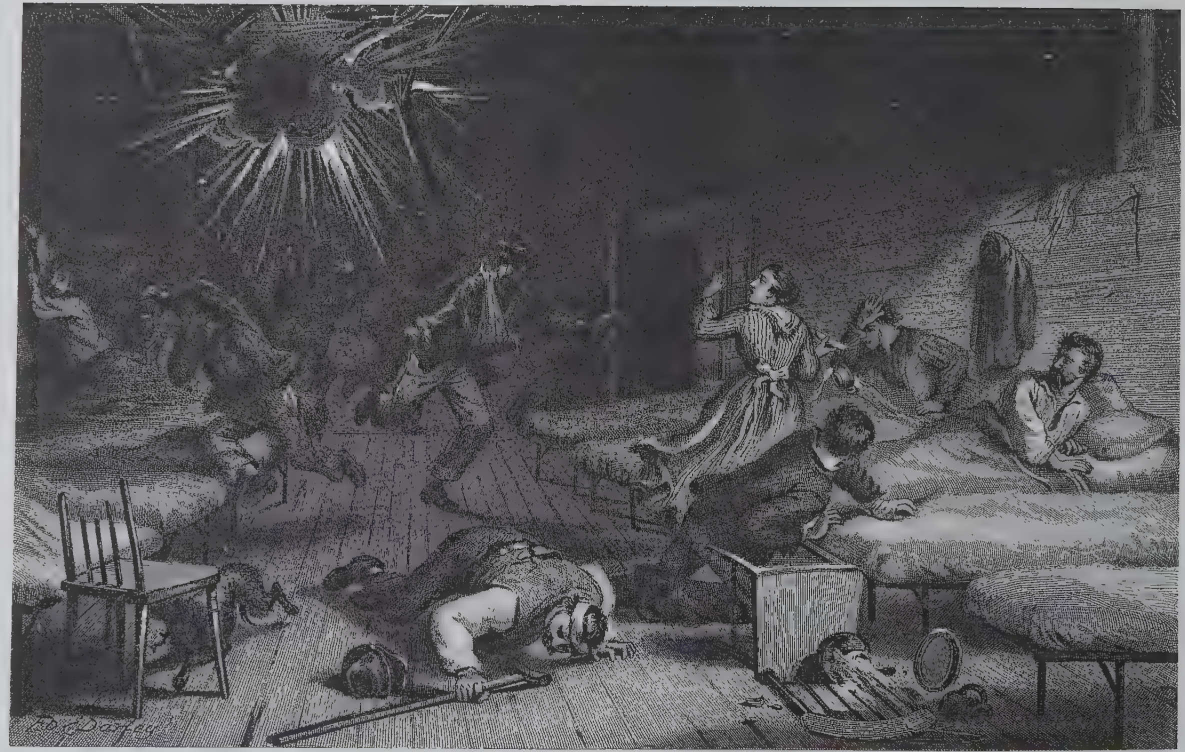

Figure 212. A Rebel Shell Bursting in a Union Hospital.

Figure 213. Walt Whitman by Thomas Eakins in 1887. (Courtesy of The Pennsylvania Academy of the Fine Arts.)

because by the end of the war, her records have indicated that only seventy-three patients died out of 1333 who had received care in the Robertson hospital.

Many refined self-sacrificing ladies nursed the wounded day and night. Their heroic benevolence inspired others to join them. Some of these women included *Miss Kate Cumming, Mrs. Ella Newsom,* and *Mrs. Gilmer.* Hospitals were named in honor of Mrs. Newsom and Mrs. Gilmer.

The mansion of *Robert E. Lee* was converted into a hospital, and here the wounded from the Civil War's first battle, Bull Run, were brought. Now the mansion's beautiful estate is known as *Arlington National Cemetery.*

Temporary hospitals were organized in any available building. Other structures were hastily erected or tents were pitched. Public buildings were commandeered, and at one time the Capitol at Washington was converted into a hospital, 400 wounded being nursed in the Senate and House and 300 in the rotunda. Hospital steamers are said to have originated during this war, and many were in service along the Ohio and the Mississippi. There were also hospital trains.

In many hospitals there were ward masters and orderlies who did as much of the nursing as they could. The women nurses dressed wounds, gave medicines and attended to diets. The hours of duty were long. There were many medical cases, fevers, dysentery and even smallpox, and many nurses died of disease contracted in the line of duty.

Despite all efforts, many soldiers had insufficient care and many died from neglect. After some battles hundreds of wounded were laid in open sheds or tem-

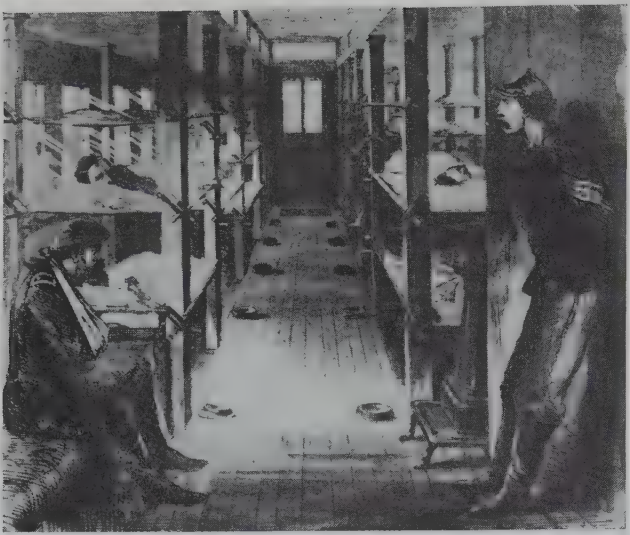

Figure 214. Interior of a Hospital Train, 1864. (Bettmann Archive.)

porary shelters without bedding, and there were only a few surgeons to look after them. The so-called "ambulances" were often only springless wagons.

The simultaneous formation of the Red Cross Society and the *U. S. Sanitary Commission* is one of the great coincidences of history. Neither knew of the other's work until it was fully organized and in operation; yet the principles and course of action in each were nearly identical. Both organizations marked the beginning of the joint work of men and women in public enterprise.

In the late spring of 1861, handbills were distributed in New York City signed by over ninety respected ladies announcing a mass meeting at Cooper Union. More than 4000 determined women attended. They organized *The Women's Central Association for Relief.* This group and others of similar interest and organization banded together. The leaders of this newly formed group cajoled a Unitarian clergyman, Henry W. Bellows, D.D., of New England, a physician, Elisha Harris, and three other doctors into going to Washington to plead for the establishment of a Sanitary Commission.

The United States Sanitary Commission was established by order of President Lincoln on June 13, 1861. One of the reports of the Sanitary Commission revealed that 15 per cent of the physicians in the Northern regiments were either poorly qualified or totally incompetent for their task. Needless

Figure 215. Mary A. Livermore (1820–1905), the devout advocate of suffrage for women, as well as education for women, served with the United States Sanitary Commission during the Civil War.

to say, the medical officers of the Army were resentful of the efforts of the Commission to aid the medical care of the soldiers. Much is known now that might not have been disclosed except for their constant vigilance and much was prevented that might have been disastrous for the welfare of mankind. The results of their endeavors included pavilion hospitals which could be dismantled and moved, standards for camp water supply systems, latrines, and garbage disposal.

After the first battles of the war, the wounded had practically no care. "Common soldiers, untrained, lazy, and indifferent or brutal, were cooks and nurses for the war hospitals, the largest of which had forty beds. There were no medicines, no stores, nor ambulances. The camps were dirty and unsanitary." Those who knew of these conditions were filled with shame and resolved to do something about it. When they first offered supplies and service, the Government Medical Bureau looked upon the proposal with suspicion; but dire need soon forced it to accept. The Commission collected and distributed supplies of all sorts, planned camps and attended to their sanitation, tended the wounded on the field and in hospitals; in short, the Commission undertook a large share of the health work for the army. It provided such things as green vegetables, given by the farmers for the soldiers, thus preventing scurvy, the great army scourge. (Dehydrated vegetables were used, on the suggestion of a Harvard professor, in 1864.) In 1862 it equipped a hospital train, an entirely new idea. Called "the largest army charity the world had ever seen," the Commission collected and spent over $5,000,000 in cash and $15,000,000 worth of supplies, an unprecedented amount for those days.

During the Civil War, many of the medicines made from herbs were obtained from the herb industry managed by the *Shakers* or the *United Society of Believers in*

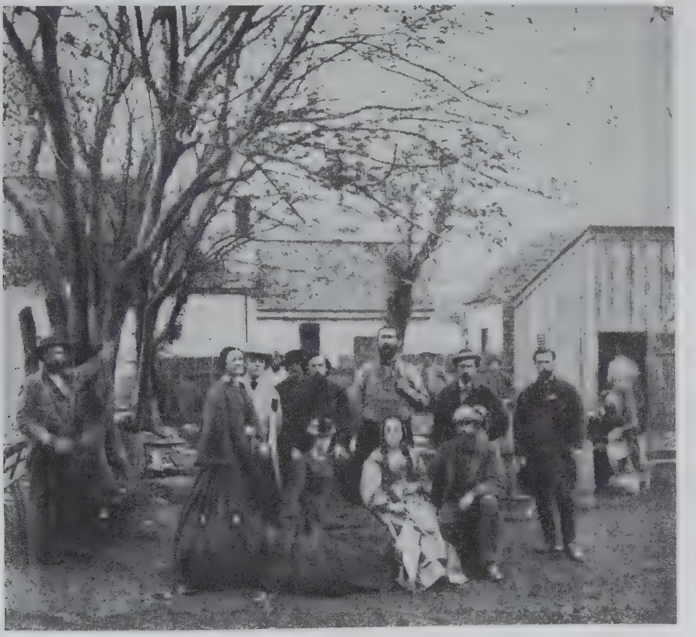

Figure 216. Sanitary Commission Officers and Nurses at Fredericksburg in 1864. (Courtesy of *The Trained Nurse and Hospital Review.*)

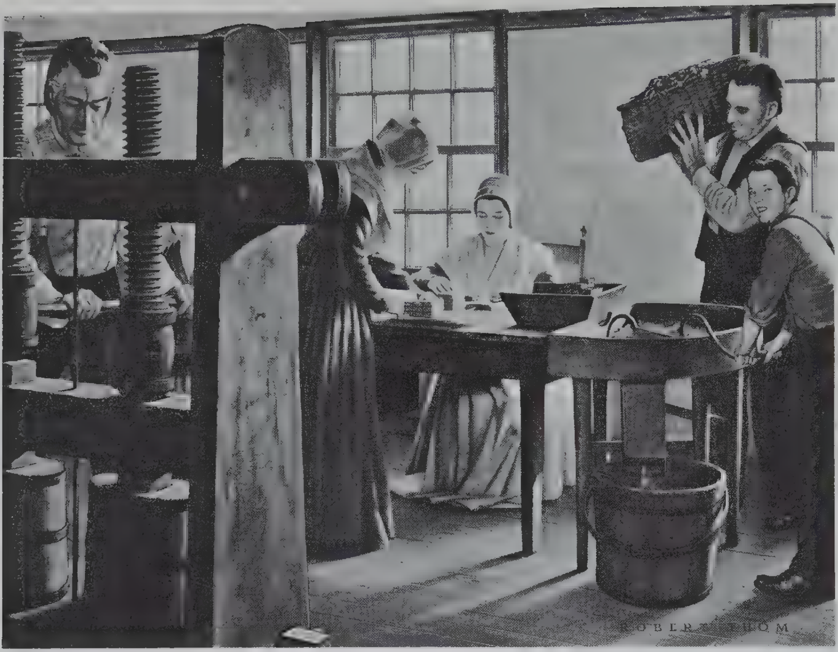

Figure 217. Shakers and medicinal herbs. © 1955 Parke, Davis & Co.

Christ's Second Coming. They were the first group in the United States to grow herbs for the pharmaceutical market.[12] Their main industrial enterprise was the cultivation of herbs; they collected them, dried them or extracted the medicinal ingredients, and packed and shipped them.

The Shakers were meticulously clean and had an efficient system of preparing these medicines. In addition to the beautifully cared for gardens, there was a herb house where the herbs were dried and packaged; another building was called the extract house where presses and boilers were located; and water, the well known universal solvent, was brought by clay pipes from mountain springs. This provided a pure water supply. Raffinesque,[13] the famous French-American botanist, said, "The best medical gardens in the United States are those established by the communities of Shakers or Modern Essenes."

THE RED CROSS SOCIETY

One of the movements of the nineteenth century was the development of the Red Cross Society. It was originally an association of citizens, not necessarily doctors or nurses, who undertook to render effective help in time of war or calamity. In the beginning it was meant only for war, but soon came to include all calamities which involved a considerable number of people.

For centuries there had been societies for helping the wounded in time of war, many of which had done efficient work. The Red Cross idea was far greater than anything that went before it, in that it placed the work on an *international* basis and suggested teamwork between nations, a thing almost unheard of before that time.

The plan originated in the mind of *Jean Henri Dunant,* a Swiss, and to the greatness of his ingenuity the work owes its effectiveness. Dunant said that Florence Nightingale had inspired him.

In 1859, while traveling in Italy, Henri

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[12] Andrews, Edward D., and Andrews, Faith: *Shaker Herbs and Herbalists.* Stockbridge, Mass., Berkshire Garden Center, 1959, p. 3.

[13] *Ibid.,* p. 4.

Dunant saw the field of Solferino on the day after the battle in which 300,000 were engaged. He helped in caring for the wounded and was horrified by the needless suffering that he saw. He wrote a vivid description of it, began lecturing on the subject and interviewed kings, princes, generals and church officials. It was his vision and persistence that brought about this work of such incalculable value.

In 1863 Dunant formulated a plan by which he proposed to organize in every country an association for war relief. Each was to be an independent society, with a strong international bond of affiliation and with a guaranteed neutrality of supplies and personnel. The result was that in October, 1863, an international conference was held at Geneva, Switzerland, where representatives of sixteen nations agreed to a provisional program. This led to the formation of an international Red Cross society. The United States had sent no official delegate, as she was in the midst of the Civil War and harassed by her own problems.

In August 1864, a formal diplomatic congress was held which signed what is known as the *Geneva Convention.* This stipulated that each nation which ratified the convention should have a national committee or society, civil in character and function, which alone should have the right to send a surgical corps to a war. Such organizations were at that time under way in twenty-eight countries. The well known emblem of the society was also adopted.[14]

The convention was ratified at that time by twelve nations; by 1925 there were fifty-two national Red Cross organizations, and in 1945, sixty-seven. Additions have been made to its program from time to time, and its provisions are now recognized as a part of international law.

Figure 218. Jean Henri Dunant.

In some countries similar societies found to be already in existence were affiliated or absorbed, keeping the original idea of cooperation. The idea of helping in disaster came early, so that earthquakes, extensive floods or forest fires, famines and all catastrophes that needed more than local help were included. The present emphasis is on improvement of health, prevention of disease, and relief in suffering.

In every country the society makes preparation beforehand for war or disaster, having at various centers great storehouses of every sort of material—tents, portable houses, furniture, tools, clothing and medical and surgical supplies. The Red Cross personnel are men and women who can leave their regular occupations; its organization provides means of getting together on an hour's notice a group of previously instructed workers. The efficiency of its organization has repeatedly been shown, when governments were helpless because of official "red tape."

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[14] During the Serbian War of 1876 the Turkish Government notified the powers that it would use the red crescent instead of the red cross as the insignia of its relief societies.

The Red Cross has provided temporary shelter, food, clothing, medical and nursing care, sanitary engineering and anything else needed. In the United States in cases of earthquake or extensive floods, the Society has given or loaned money to rebuild houses or reestablish businesses. In war its workers are under military discipline, but the societies of neutral countries may give aid to both sides of warring nations. Outside the United States, help has been given in volcanic eruptions, typhoons, floods, epidemics, famines, minor wars and reconstruction after them.

The First World War caused an unprecedented development of the Red Cross. In 1919 the great health authorities of the world formed a league which is a federation of the various national Red Cross societies.[15] This league has expanded its program to include public health and has become interested in the control of tuberculosis and venereal diseases, and in child welfare.

Since these things involve an interest in the training of nurses, the *Division of Nursing* was promptly created by the League. Its directors have included Alice Fitzgerald and Katherine Olmsted of the United States of America and Mrs. Maynard Carter of England; Yvonne Hentsch of Switzerland is the present director.

In 1932 the Red Cross established under the British College of Nursing an international course in *public health nursing,* given first at King's College, then at Bedford College, London. A course in teaching and administration was added in 1934. Travel in the interests of nursing was a part of the program.

The *Florence Nightingale Medal* was established in 1912 by the International Red Cross Committee, to be given on alternate years to nurses "who have distinguished themselves in an exceptional manner by great devotion to their patients in time of war or peace." This medal has been given

Figure 219. Yvonne Hentsch, Director of Nursing and Social Service, League of Red Cross Societies.

Figure 220. Clara Barton. (From a photograph taken during the Civil War.)

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[15] The International Red Cross Committee is a group of Swiss citizens responsible for certain Red Cross activities.

to organizations, graduate nurses, nurses' aides and to nurses who died in war.

In some European countries the Red Cross had its own hospitals and trained its own nurses, the courses varying greatly in length and content. Some courses lasted three months, some three years in an accredited school of nursing. Some consisted of lectures to laymen and schoolchildren, or instruction in first aid. Red Cross hospitals sometimes cared for the sick poor or the army in peacetime.

The United States, the thirty-second country to enter the Red Cross, soon formed the *American Red Cross Society. Clara Barton,* a nurse in the Civil War, in 1870 had seen the work of the Red Cross in the Franco-Prussian War. In 1881 she organized in Washington a Red Cross Committee and so persuaded the Government, that in 1882 it finally ratified the Geneva Convention and gave the committee official standing.

The proper scientific and social ingredients had been added to the culture medium for the growth of nursing.

XI

The Nineteenth Century (Continued)

THE FIRST SCHOOLS OF NURSING IN THE UNITED STATES

Florence Nightingale's work and the founding of her school at St. Thomas' were well known in America. It was not long before doctors and others caught something of her vision that better nursing could be done by educated women.

Doubtless the first attempt to train nurses on this continent was made by the Ursuline Sisters of Quebec, who, about 1640, taught the Indian women to care for their sick.

The family of Dr. Valentine Seaman, of New York, claims that he was the first person in the United States to found a school for nurses. His son says, "In 1798 Dr. Seaman introduced the first regular school for trained nurses, from which other schools have since been established." He enrolled about twenty-four pupils and gave them a course of lectures in anatomy, physiology, care of children and midwifery.

The events of the preceding ten years—the Crimean War, the educational endeavors of Florence Nightingale, and the Civil War—had focused attention on the necessity for nurses and on the importance of an educational system in which to pre-

Figure 221. Dr. Valentine Seaman, attending surgeon to the New York Hospital, 1796–1817, and one of the first to teach nurses.

pare them. Interest was stimulated by doctors as well as enlightened citizens, and efforts to inaugurate a program for the preparation of nurses were made.

In 1869 at a meeting of the *American Medical Association,* Dr. S. D. Gross as chairman presented a report of the *Committee on the Training of Nurses,* which recommended that nursing be placed under the control of the medical profession. They proposed that there should be a school for the training of nurses in every large hospital, not only to supply demands of that hospital but also to care for families in their homes. The teaching was to be given by the medical staff as they were doing for the recruits for the field of medicine. The county medical societies were to take the responsibility for the district schools. The recommendations of the committee were not adopted, fortunately.

The most popular woman's magazine of this period was *Godey's Lady's Book,* and in 1871, Mrs. Sarah Hale, editor of *Godey's Lady's Book* wrote an editorial, which appeared in the February 1871 issue, entitled "Lady Nurses."[1]

> Much has been lately said of the benefits that would follow if the calling of sick nurse were elevated to a profession which an educated lady might adopt without a sense of degradation, either on her own part or in the estimation of others. . . .
>
> There can be no doubt that the duties of sick nurse, to be properly performed, require an education and training little, if at all, inferior to those possessed by members of the medical profession. . . . The manner in which a reform may be effected is easily pointed out. Every medical college should have a course of study and training especially adapted for ladies who desire to qualify themselves for the profession of nurse; and those who had gone through the course, and passed the requisite examination, should receive a degree and a diploma, which would at once establish their position in society. The graduate nurse would in general estimation be as much above the ordinary nurse of the present day as the professional surgeon of our times is above the barber-surgeon of the last century.

Mrs. Hale expressed the absolute necessity of a good general education. Her words fell on deaf ears, and in 1873 a Dr. Aeneas Munro in *The Science and Art of Nursing the Sick* stressed the need for requiring that nurses be able to read and write and bemoaned the fact that so many could not do either.

In both England and America the need for trained nurses was so great that schools of nursing inevitably took root and grew. As in England, the pioneer nurses in America were unusual women who had vision, force, great courage and persistence. It was these few courageous women who laid the solid foundations on which we now stand.

At the time of the Civil War, there were said to be only sixty-eight hospitals in the country; in 1872 a survey was made and 178 were found. From that time on, the number increased rapidly, unquestionably because of the improvement in nursing, and of the fact that doctors and patients found better and more convenient service in them than in the average home. The process seemed slow, but in thirty years the picture had changed. In 1900 there were about 2000 hospitals in the United States. From that time on they multiplied at an incredible speed. Those already founded expanded their facilities.

The New England Hospital for Women and Children, composed entirely of women physicians, took its first step toward a school of nursing when Dr. Marie Zakrzewska came there in 1859. She suggested practical instruction in the hospital for women medical students, and that a school of nursing be established. The hospital charter was issued in 1863 and included a nursing school.

In the 1864 Annual Report of the New England Hospital for Women and Children was recorded the adoption of the first by-laws on June 5, 1863. It is interesting to read them carefully:

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[1] Hale, Sarah: "Lady Nurses." *Godey's Lady's Book and Magazine. 82:*188–189, from January to June, 1871.

The objects of the Institution shall be
1st.—To provide for women medical aid of competent physicians of their own sex.
2nd.—To assist educated women in the practical study of medicine.
3rd.—To train nurses for the care of the sick.[2]

In the early '70's a committee was appointed to develop the plan for instituting a training school for nurses. It was described as:[3]

> EDUCATION OF NURSES
>
> In order more fully to carry out our purpose of fitting women thoroughly for the profession of nursing, we have made the following arrangements:
>
> Young women of suitable requirements and character will be admitted to the Hospital as school nurses, for one year. This year will be divided into four periods; three months will be given respectively to the practical study of nursing in the Medical, Surgical, and Maternity Wards, and night nursing. Here the pupil will aid the head nurse in all the care and work of the wards under the direction of the Attending and Resident Physicians and Medical Students.
>
> In order to enable women entirely dependent upon their work for support to obtain a thorough training, the nurses will be paid for their work from one to four dollars per week after the first fortnight, according to the actual value of their service to the hospital.
>
> A course of lectures will be given to nurses at the Hospital by the physicians connected with the Institution beginning January 21. . . . Certificates will be given to such nurses as have satisfactorily passed a year in practical training in the Hospital.

On *September 1, 1872,* the *New England Hospital in Boston* (later transferred to Roxbury, Massachusetts) admitted a class of five students to the newly formed *Training School.* This school was administered under the direction of Susan Dimock, M.D. She had finished her medical education in Switzerland and had been to Kaiserswerth and knew its methods. Dr. Zakrzewska taught bedside nursing. The course was one year in length. No classwork was required, although lectures were given during the winter months. Books were not available for giving a background in nursing so that lectures without demonstrations comprised the educational aspects of the curriculum.

Figure 222. Dr. Susan Dimock.

The course was a rigorous one. The hours of duty extended from 5:30 A.M. to 9:00 P.M. The living arrangements consisted of rooms between the hospital wards because the students had to take care of the patients night and day. Days off for illness had to be made up. At the end of the year on October 1, 1873, one student graduated.

When the second year began, a nurse was hired as a head nurse and instructor of the students of nursing, and a theoretical program was started. The length of the program was expanded to sixteen months and by the time the school celebrated its fifth anniversary, it was an eighteen month course. The so-called enrichment provided one month in the diet kitchen at the hospital and one month of district nursing in the community. There were now two head nurses, and a superintendent of the training school. In 1893, the program was lengthened to two years, in 1901, to three years.

On July 27, 1841, Melinda Ann Richards (1841–1930) was born. *Linda Richards* was the one student who graduated on October 1, 1873, and has been called *"America's first trained nurse."*

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[2] Munson, Helen W.: "Linda Richards." *American Journal of Nursing, 48:*552, 1948.

[3] *Ibid.,* p. 552.

Miss Richards had been a nurse in the Boston City Hospital. Going there with the idea of learning nursing, she had been greatly disappointed to find that the nurse's work and position were little more than that of a maid. She had been offered a position as head nurse there, but had refused it, claiming that she did not know enough and wanted more training. They had then directed her to the New England Hospital.

Miss Richards recorded her experiences[4] in which she mentioned that students did not wear a uniform; dark washable dresses were worn. She related that "every second week" they had a free afternoon from two to five o'clock. They had no evenings out, no hours for study or recreation, and no regular leave on Sunday. During the year's program only twelve lectures were given by the visiting staff of physicians and the only clinical instruction was given by the women interns when they ordered a treatment and the intern and student nurse together figured out the procedure. Medicines were kept in bottles that were numbered, not labeled, and there was no understanding of the medicine, its action or untoward symptoms to be observed. In addition to an absence of textbooks, no pre-entrance requirements were stated or final examinations taken.

Miss Richards has given an account of the high maternal mortality rates due to epidemics of puerperal fever and of the astonishing duty of the patients in labor to make shrouds for the hospital. Many a patient must have wondered if she were making her own!

Her first assignment as a graduate was that of night superintendent at Bellevue. After a year there, she went to the Boston Training School as the new superintendent of the school. In addition to the position for which she was hired, she insisted upon giving actual patient care herself. Many days she worked day and night. She even requested a room in the hospital, in place of the comfortable room outside of the hospital, in order to watch the patients at night. Her reason was that it would be more convenient for her if she could be called at any hour of the day or night.

In 1877, Linda Richards visited England where she met Florence Nightingale and studied the methods at St. Thomas' Hospital. Between 1885 and 1889, she was a medical missionary in Japan, establishing and directing the first training school for nurses there. In the following years, she assumed the position of superintendent of nurses at the New England Hospital for Women and Children, at Brooklyn Homeopathic Hospital, at Hartford Hospital, and at the University of Pennsylvania Hospital. Her efforts were directed then to establishing schools in hospitals for the mentally ill. She died on April 16, 1930.

In 1879, *Mary Mahoney,* another important nurse, graduated from the training school of the New England Hospital for Women and Children. She was America's first Negro nurse to graduate from a school of nursing.

Mary Eliza Mahoney (1845–1926) enrolled on March 23, 1878 in the New England Hospital for Women and Children and completed her course of sixteen months on August 1, 1879. Personal interviews were required in the selection of applicants. In addition to the previously described course of twelve months of nursing experience in medical, surgical, maternal nursing, and night duty, Mary Mahoney had four months which were needed "to prove the students' competency in all of these clinical areas" by sending them into

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[4] Richards, Linda: *Reminiscences of Linda Richards.* Boston, Whitcomb and Barrows, 1911.

Figure 223. Miss Linda Richards teaching a class at Hartford Hospital School of Nursing where she was matron from 1895 to 1897. (Courtesy of Hartford Hospital School of Nursing.)

the homes of the community for private duty under the direction of the school. There were three students who graduated with her out of the class of forty students. Twenty-two were dropped by the school, which attests to the mental and nursing ability of Mary Mahoney and the fortitude with which she accepted a rigorous program. Her experience included being responsible for a ward and the care of the patients in that ward.

The hours of duty at this institution were from 6:00 A.M. to 9:00 P.M.

In *Pathfinders,*[5] Mrs. Adah Thoms has given a description of Mary Mahoney who gave the address of welcome at the first convention of the National Association of Colored Graduate Nurses:

> Miss Mahoney was small of stature, about five feet in height and weighs less than one hundred pounds . . . she was most interesting and possessed an unusual personality and a great deal of charm. . . . Although at this meeting Miss Mahoney seemed pleased to see and to know of the upward trend of the nursing profession, to hear her make comparisons between the years 1879 and 1909 would almost lead one to believe that the training of today was rather a hit-or-miss proposition. However, she was an inspiration to the entire group of nurses present. At the close of the convention she was made a life member of the Association, exempt from dues, and was elected chaplain. . . . Through her efforts on this occasion a demonstration for nurses was held at the New England Hospital. . . .
>
> Miss Mahoney was a remarkable person. . . . She seldom missed a national nurses' meeting. Her last attendance was in Washington, when the Association met in August, 1921, as a guest of the Freedmen's Hospital Alumnae Association. This circumstance made it possible for the nurses to be received at the White House by President Warren G. Harding. The nurses carried a large basket of American Beauty roses which they presented to President and Mrs. Harding with the request that the National Association of Colored Graduate Nurses be placed on record as an organized body of two thousand trained women ready when needed for world service.

In her honor, the *Mary Mahoney Medal* was initiated in 1936 by the National Association of Colored Graduate Nurses. This medal is symbolic of the opportunities in nursing of all races, creeds, and colors.

The New England Hospital for Women and Children can boast of two other distinctions. It was the first institution in America to conduct a formal course for the training of nurses. It also had the distinction of graduating America's first trained nurse, Miss Linda Richards. The directors of this pioneer institution, which was founded by another minority, women in medicine, could well understand and be sympathetic with Miss Mahoney's desire to become a trained nurse. They, too, had experienced prejudice in their efforts to practice their profession. The opportunity they gave

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[5] Thoms, Adah B.: *Pathfinders.* New York, Kay Printing House, 1929.

Mary Mahoney was extended to other Negroes up until 1951, when the school closed."[6]

The next year, 1873, was notable, since in that year were established three of the important schools of the country—Bellevue in New York, the Connecticut Training School in New Haven, Connecticut, and the Boston Training School at Massachusetts General Hospital. It is interesting that the New York and Boston schools were the result of the efforts of committees of laywomen and were opposed by doctors, while the New Haven school was founded by doctors.

In 1872 Louisa Lee Schuyler organized the New York State Charities Aid Association, and one of their visiting committees inspected *Bellevue Hospital,* finding a serious state of affairs. The nursing was done chiefly by women who were ex-convicts and collected fees from the patients for the crude and inefficient services which they rendered them; drunkenness and foul language were common; their food was poor and they slept on bundles of straw. The doctors of the house staff took temperatures, gave treatments and recorded the condition of patients. It was a repetition of the worst days in the hospitals of Old England. Dr. Gill Wylie, who was an intern there, said, "The nurses had the impossible task of attending to from twenty to thirty patients each. The night watchman was expected to assist in the care of patients. The wards looked well on the surface; but sepsis followed slight operations or injuries, and about 50 per cent of the amputations were fatal. One out of every eleven maternity cases died."

It was reported that in Bellevue Hospital there were 900 patients "most of them in want, many in positive distress." The crowded conditions required that three patients sleep on two beds which were presumably strapped together, and five patients occupied three beds. There were no night nurses and only three night watchmen.

The report of these conditions stirred

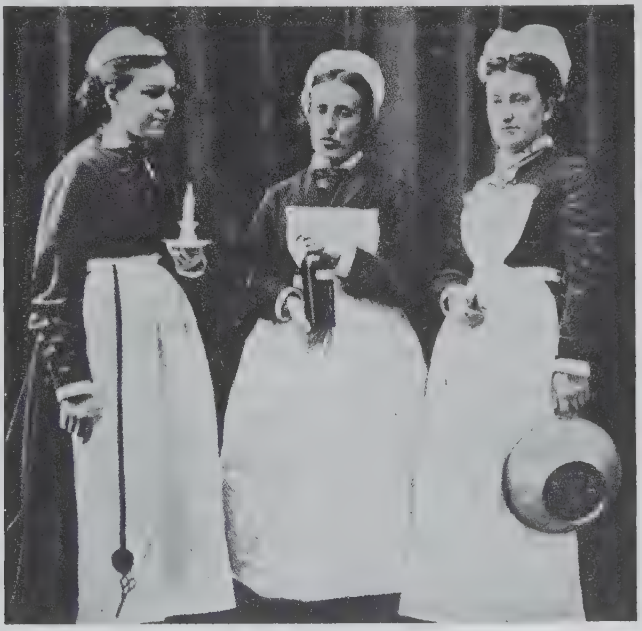

Figure 224. Three of the first nurses of the Bellevue Training School for Nurses.

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[6] Staupers, Mabel K.: *No Time for Prejudice.* New York, The Macmillan Co., 1961, p. 2.

the women's nursing committee which had asked in 1871 for a nurses' training school; the matter had been referred to the medical board, which did nothing about it. The committee felt that nursing *must* be improved, but most of the medical board disapproved of the women's interest in the matter. General James Bowen was the only commissioner who supported them, and a clergyman said publicly that it was not proper for ladies to visit a hospital of this sort.

Dr. Wylie offered to go abroad, at his own expense, to see what was being done there. He spent some time abroad and even conferred with Miss Nightingale, getting valuable advice from her. Meantime the committee, under the leadership of Miss Schuyler,[7] had succeeded in getting six wards set apart to use in making the experiment of a nurses' "training class." Funds were raised by subscription and a house was rented for the nurses' home.

In May 1873, the *Bellevue Training School for Nurses* was founded. The person who was selected to direct this new program was Sister Helen of the Sisterhood of All Saints. It was recorded that "all are lodged and boarded free of charge during the two years' course and are paid a small sum monthly while in the school, to defray their actual necessary expenses." In the beginning the course was one year in length.

Linda Richards became night superintendent in October, 1874. At that time, since no records were kept and there were no written orders, Miss Richards started these practices. There was no classwork, and the lectures were irregular. "The training did not compare favorably with that given at the New England Hospital, where far greater nicety in caring for patients was required" (Linda Richards).

In 1872 the New Haven (Connecticut) Hospital appointed a committee of three doctors and a layman to report upon the practicability of training nurses. Dr. Gill Wylie's report upon European schools of nursing aided them in their investigation. The committee reported in April, 1873, that it was not expedient for the hospital itself to undertake such a work, but it recommended the establishment of a school as a separate organization with the hospital as its field.

The Connecticut Training School obtained its charter before Bellevue did, but was not opened until later. Dr. Francis Bacon, after a study of the English schools, prepared a scheme of organization.

The school was founded, but there were no pupils, so they advertised for "probationers" through country newspapers, ladies' missionary societies and notices at railway stations and in post offices. All the early schools found it hard to convince young women that it was necessary to spend even six months' time in learning nursing. The Civil War, however, had done much to call attention to the need of training.

In October of 1873, the Connecticut Training School at the New Haven Hospital was established, with three pupils. Miss Bayard, a graduate of the school of the Woman's Hospital of Philadelphia, was in charge. The doctors liked the work of the nurses and were, from the first, enthusiastic about the school. Shortly after, the school was allowed to take eight students, and at the end of its second year the nurses were sent into private nursing. The public took kindly to them, and there was an immediate demand for their services.

In 1807 the *Massachusetts General Hospital* had been started by a group of prominent doctors. It was a private enterprise, though designed for nonpaying patients, and a model hospital, noted for its cleanliness and good nursing. Mrs. G. L. Sturtevant, who was nurse there in 1862, tells us of the conditions of work:

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[7] The National Institute of Sciences recognized Miss Schuyler as the founder of Bellevue's training school.

> The nurses were paid $7.50 a month, head nurses $12. There were no maids; the nurses washed the dishes and did the cleaning. The night watchers left the ward at 5 A.M., making a verbal report to the head nurse. The day nurses went on duty at that hour, had breakfast at six, and remained on until 9:30 P.M., taking an occasional hour off if they could get it. They slept in small rooms between the wards, two nurses in a folding bed. In the daytime the room was used for doctors' consultations or for dressings and minor operations.

The committee which was formed to present the matter of a Boston Training School to the Massachusetts General Hospital consisted of a group of men and women of intellect and social prominence. The hospital trustees and staff did not approve of a school for nurses, but the standing of the committee was such that they were compelled to consider it.

It was finally agreed that the hospital should allow the school to open as an experiment. Subscriptions were secured for the expenses of the school, and pupils were sought. Six young women were accepted, and on November 1, 1873, the *Boston Training School* was opened.

The committee had asked Florence Nightingale and Thomas Rathbone to find them a superintendent of nurses but had no encouragement. They finally selected Linda Richards, as being "the most desirable person to be had in America." She found the school still on trial and rather discredited by the staff. She saw that the nurses were working much as their untrained predecessors had done; there were no maids, so nurses were occupied doing dish-washing and dining-room work, washing poultice cloths, taking turns at doing night duty and being head nurse. Cotton was expensive, so all soiled dressings and poultice cloths, of which there were many, had to be washed (in the patients' bathtub) and ironed by the nurses.

Figure 225. A Hartford Hospital student in the class of 1898 gazes fondly at two of her charges. (Courtesy of Hartford Hospital School of Nursing.)

Miss Richards reorganized the work, got classes under way and developed the school. "Her major job was to prove to the staff that trained nurses were better than untrained ones. One means she sometimes used to demonstrate this was to care for the sickest patients herself. Gradually the staff realized their value and began to refer to 'our school' with pride." By the end of her first year Miss Richards had convinced the doctors that the new régime was a success, and the school was accepted by the trustees. Miss Richards remained for two and one-half years, and when she left to study training school work in England the school was on a permanent basis. For some decades *Training School for Nurses* was the accepted term, and students of nursing were called *pupils.*

In analyzing the development of the

Figure 226. Linda Richards. (From a painting given to the New England Hospital for Women by its alumnae.)

new program at Massachusetts General Hospital,[8] it is noted that: In 1874, a thermometer was requested for the use of nurses in taking care of patients; a month of night watching was added to the program; in 1875, cooking became an essential addition, there being no cooks in hospitals; in 1876, pupils were permitted in the operating room; in 1889, a class on "insanity" and one on "bacteriology" were added; in 1891, pupils were responsible for cleaning and sterilizing instruments for Saturday operations; by 1896, pupils were required to assist with operations on Saturday. (The reason for students in the operating room only on Saturday is not given.) Gradually, a graduate nurse was placed in charge of the operating amphitheater, pupil nurses assisted at operations and, finally, assumed the responsibility of administering the ether. By 1895, *Miss Annabella McCrae* became a fulltime instructor in the teaching of nursing procedures. In 1896, pupil nurses received instruction in the administration of hypodermic injections.

In 1896, The Boston Training School ceased to be an independent school and was made an integral part of the Massachusetts General Hospital.

In 1874, the beginning of nursing education in Canada was initiated when The *St. Catharine's Training School and Nurses' Home* came into being. The name was changed later to *The Mack Training School for Nurses* in connection with St. Catharine's General Hospital in honor of the founder, Dr. Theophilus Mack.

Parts of the correspondence between Miss Lavinia Dock and Dr. Howard Dittrick of Cleveland appear in the history of Mack Training School for Nurses.[9]

> Miss Nightingale's new plan of training was begun in St. Thomas' Hospital in 1860, and only four or five years after that, Dr. Mack, having comprehended her work and its meaning—determined to have a hospital with a home for nurses on Miss Nightingale's plan, with a trained nurse at its head. This is where he outdistanced all others on the American continent.
>
> Today, when this system is universal, we do not realize its immensely revolutionary character in Miss Nightingale's day. It was unknown in English hospitals, although British matrons held dignified and respected positions. It heralded, in fact, a phase of the "woman movement" although this was not foremost with Miss Nightingale.
>
> Dr. Mack and his intelligent community, familiar with Miss Nightingale's work in the Crimea and in the English hospital world, adhered to her principles, and determined as early as 1864 to establish and follow them loyally. Beginning in a small way, in that year—they developed their purpose so well that in 1873 they sent Miss Money to England to bring out a staff of nurses trained in the "Nightingale System," and she returned with three from Guy's Hospital, and several probationers.

The final success was the result of the efforts of Dr. Mack (for whom the school is named), who in 1874 sent to England for nurses and founded a school which has always been worthy of the name and produced some able nurses. Its establishment made trained nursing in Canada practically simultaneous with that in the United States.

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[8] Sleeper, Ruth: The two inseparables—nursing service and nursing education. *The American Journal of Nursing. 48:*678–681, 1948.

[9] Seventy-fifth Anniversary (1874–1949) of the Mack Training School for Nurses. St. Catharine's General Hospital, p. 3.

The *Montreal General Hospital* was founded in 1821, and in 1875 the Board applied to Miss Nightingale for help in establishing a school. She sent them five nurses, but these were not successful. Finally, under *Nora Gertrude Livingston,* a graduate of the New York Hospital, a superior school was established which gave the first preliminary course and was the first three-year school in America. Flora M. Shaw, one of its graduates, established in 1920 the University School at McGill University.

Figure 227. Nora Gertrude Livingston.

The *Toronto General Hospital,* established about 1830, had a similar history. In 1877 an attempt was made to establish a nursing school, but it did not flourish until 1884 when it was taken over by *Mary Agnes Snively,* one of the founders of the Canadian Nurses' Association and a graduate of Bellevue, New York. During her twenty-six years of service, Miss Snively elevated the standards of the Toronto General Hospital school.

The inception of nursing education had been fulfilled and with the early schools of nursing came the dawn of modern nursing.

It was most unfortunate that hospitals saw an economic advantage in the establishment of schools of nursing. A few recognized the duty of providing skilled nurses for the community, but most of them stated frankly that their schools were organized "to provide better nursing *for the hospital.*" Also it was promptly discovered

Figure 228. Flora Madeline Shaw. (Courtesy of *The Trained Nurse and Hospital Review.*)

Figure 229. Mary Agnes Snively. (Courtesy of *The Trained Nurse and Hospital Review.*)

that students in training could not only be more easily disciplined and controlled, but that they were cheaper and more satisfactory than hired nurses.

In consequence, during the eighties, and still more in the nineties, many schools were started in small private and special hospitals where it was impossible to give adequate training or experience.

Three divisions of nursing, hospital work, private duty and visiting or district nursing, were recognized.

Hospital nursing positions at first were only those of superintendent of nurses and perhaps an assistant, and operating and night supervisors; these were the only graduates employed. Usually the head nurses were students. Doctors gave lectures and the superintendent of nurses gave most of the classes, both sciences and nursing arts. Gradually the better schools added instructors, graduate head nurses and graduates for general duty.

As the increasing number of schools produced a body of trained nurses, there was a marked demand for them to do *private duty* in private homes. People did not go to hospitals for medical illnesses, rarely for obstetrics and not always for surgery. Even major operations were often done in private homes. Typhoid, lasting a month or more, was prevalent for about one third of the year; pneumonia had a high death rate. The vast majority of graduate nurses did private duty. People began to understand what a trained nurse was and gave her their confidence. Twenty-four-hour duty was the rule for years.

In *A Century of Nursing,* written in 1876, Abby Woolsey stressed the desirability of elevating nursing to an educated and honorable profession. She pleaded for quality in educational programs, expressing the feeling that nursing schools should be practically normal schools (the predecessor of the state teachers' colleges). A Committee of the Bellevue Training School mapped plans for a "College of Nursing"; this did not become a reality.

John Eaton, Commissioner of Education, in a public address conveyed the impression that the training of nurses should be an educational endeavor and must be planned on educational lines. His address was published under the title, "Training Schools for Nurses," by the Bureau of Education, Washington (No. 1, 1879).

In addition to the founding of these early schools of nursing in the last quarter of the century, there were some dynamic leaders in nursing education and teaching tools such as textbooks were published.

Isabel Hampton Robb (1860–1910) was a most outstanding leader in nursing and in the education of students of nursing. Born in Welland, Ontario, Canada, after attending St. Catherine's Collegiate Institute for several years, she accepted a teaching position. She decided to enter the field of nursing and in 1881 was admitted to *Bellevue Training School* as a student nurse and graduated in 1883. She was a remarkably constructive thinker and had the rare ability both to create and to make practical application of new ideas.

In 1886, she became *Superintendent of*

Figure 230. Isabel Hampton Robb.

Nurses at Illinois Training School in Chicago. The school contracted with Cook County Hospital for clinical experience for the students. The ability of Miss Isabel Hampton as an organizer began to be noted in this position. She put into practice a graded system of theory. Through her good judgment, she terminated the practice of students' doing private duty as part of their education.

In 1889, Miss Hampton journeyed to Baltimore to organize a new school at *Johns Hopkins Hospital.* Here her fertile mind gave birth to new ideas, and many innovations were attempted. She became "Principal" instead of "Superintendent"; she established policies for a twelve-hour day which included time allowance for meals, definite recreation, rest and study periods, and a limit on the day's work. Her aim was quality nursing care which combined a happy balance of intellectual and manual skills. She had the ability and persistence to achieve it. Of her leadership qualities, Miss Nutting has commented:[10]

> Planning, initiating, directing, and controlling,—such activities provided for her an element in which she lived and moved with the greatest ease and freedom. She was in every sense of the word a leader, by nature, by capacity, by personal attributes and qualities, by choice, and probably to some extent by inheritance and training; a follower she never was.

Realizing the need for textbooks, Miss Hampton wrote *Nursing—Its Principles and Practice for Hospital and Private Use.*

Another challenging assignment was given to her. During the World's Fair in Chicago in 1893, the International Congress of Charities, Correction and Philanthropy was to be held, and a section for nursing was included. Miss Hampton needed the thinking and advice of Florence Nightingale as well as nurse educators in this country. Miss Nightingale shared her thinking generously through correspondence, and a firm friendship blossomed between these two dynamic leaders.

During the Congress, the nurse educators were called together by Miss Hampton and the *Society of Superintendents of Training Schools for Nurses* evolved. She became the first president.

Miss Hampton's physical attractiveness combined with a charming manner and poised bearing, has been written of by many admirers. Dr. Hunter Robb became her chief admirer and in June of 1894, Isabel Hampton married Dr. Robb. She resigned from active nursing but remained an ardent supporter in the fight for better preparation for nurses, especially nurse educators, and of a better quality of care for patients.

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[10] Nutting, M. A.: "Isabel Hampton Robb—her work in organization and education." *American Journal of Nursing, 10:*19, October 1910.

Her revolutionary but sound ideas were presented in 1895 at the annual convention of the American Society of Superintendents of Training Schools for Nurses. She advocated a *three-year course* and an *eight-hour day!* This at a time when many students were working twice that number of hours. Another suggestion was to terminate the practice of giving stipends each month and with the money saved, she suggested establishing libraries. This would reverse the status from employee to student.

Mrs. Robb felt that an organization was needed for *all nurses,* not just for nursing school administrators. In 1896, she became the first president of the newly formed *Nurses Associated Alumnae of the United States and Canada,* which was a nation-wide union of alumnae associations. In unity there could be strength.

Unlike Florence Nightingale, Isabel Hampton Robb believed that the status as well as preparation of practitioners of nursing would be benefited by licensing examinations and registration. A form of legal control would protect patients from incompetent nurses as well as elevate the standards for the nurse as it did for both the physician and the lawyer. Her efforts played a large part in the development of the courses established in 1898 at Teachers' College.

Isabel Hampton Robb's brilliant career was ended abruptly in 1910 in an automobile accident.

A trust fund was established to perpetuate the memory of this brilliant leader. The *Isabel Hampton Robb scholarships* have permitted many nurses to receive a more enriched background which has been used hopefully to elevate the quality of nursing care, as well as that of nursing education.

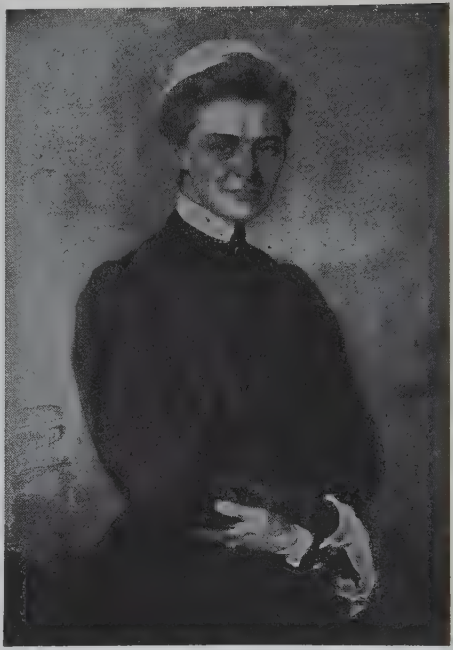

Figure 231. M. Adelaide Nutting (1858–1948). (From a painting by Cecelia Beaux.)

Mary Adelaide Nutting (1858–1948) was born in Quebec in 1858. She attended private schools in Montreal, Boston and Ottawa, receiving special instruction in music and art. She was a member of the first class to graduate from Johns Hopkins and became principal of this school when Mrs. Robb resigned. Her concepts of nursing education seemed to parallel those of Mrs. Robb and Miss Nutting carried out many of the reforms Mrs. Robb had initiated.

In 1907 Miss Nutting was appointed to the faculty of Teachers' College, Columbia University, and became the first professor of nursing in the world, a position which she held until her retirement in 1925. Out of gratitude for her outstanding leadership The Adelaide Nutting Historical Nursing Collection was dedicated to her memory and has been exhibited at Teachers' College.

Among her many achievements are: raising the standards of basic nursing education; assisting in the establishment of nursing organizations; preserving the past in the four-volume *History of Nursing* written in collaboration with *Lavinia Dock;* encouraging provision for financial support for schools of nursing, and thus permitting separation of schools of nursing from hospital ownership and control; developing programs at Teacher's College for nurses in teaching, public health, supervision and administration, and coordinating nursing services during World War I. Other contributions included a brochure entitled *A Sound Economic Basis for Schools of Nursing,*[11] and, in 1912, *The Educational Status of Nursing.*[12]

Awards were bestowed on her: Yale University conferred on her an honorary degree of Master of Arts in 1921; the Liberty Service Medal was awarded to her for her humanitarian and patriotic services; the National League of Nursing Education designed the Adelaide Nutting Medal for Leadership in Nursing Education, presenting the first medal to Miss Nutting in 1944.

UNIFORMS

Nurses' uniforms had not been designed or worn by lay nurses up to the latter part of the nineteenth century. Finally, a wealthy and beautiful young lady, Miss *Euphemia Van Rensselaer,* has been credited with recognizing the need for a uniform and designing one.

Figure 232. Euphemia Van Rensselaer in 1878 (Sister Marie Dolores). (Courtesy of Mrs. Christopher Wyatt.)

Miss Van Rensselaer was born in 1840 of an illustrious family. Her mother was Elizabeth King, the daughter of Governor King of New York, the niece of Charles King, President of Columbia University, while her grandfather, Rufus King, had been one of the early American statesmen who had been ambassador to Great Britain on two occasions. Miss Van Rensselaer's father had been Brigadier-General Van Rensselaer whose death from typhoid fever prompted her to become a trained nurse.

The niece[13] of Miss Van Rensselaer relates the story in this way:

> The story I heard from my Mother was that Euphemia Van Rensselaer volunteered for service at Bellevue when the two Miss Schuylers—grand-daughters of the General—organized the States Charities Aid Association. Up to that time the only nurses were the old women collected by the Hospital. The Misses Schuyler, inspired by Florence Nightingale were determined to relieve this impossible situation and procured volunteers. In 1876 it was determined to have uniforms but this did not suit the volunteers. It was then that my Aunt set the example by taking home some material and having a uniform made for herself. When Miss Van Rensselaer was seen duly clad the others decided to follow suit. She later became an Anglican nun in Clewer, England and then when her brother, who was a clergyman in the Episcopalian Church came over to Rome, she followed him and joined the Sisters of Charity. She was sent to Nassau to found a Mission and on her return organized Seton Hospital for tuberculosis which was taken over later by the City. She then organized the Grace Institute —a trade school for women—and ended her life in a Day Nursery in her brother's parish—St. Francis Xavier's—the Jesuit Church at 16th Street and Sixth Avenue. She died about 1912 in the New York Foundling Asylum.

Euphemia Van Rensselaer designed the blue and white uniform, apron and cap of the Bellevue Training School.

The nurse's cap has always been and still is distinctive. It probably originated when all women wore caps indoors; this would account for the lace frills on the cap which Florence Nightingale designed for her school in 1860. At one period the cap which entirely covered the hair was thought correct, and the "dusting cap" pattern was much used. Since these were ugly, the style gave way to one which covered the knot of hair that was usually on top of the head. Caps either were not washable (book muslin or organdy) or had elaborate frills that required special laundering. About 1910, simply made, easily laundered caps began to be used. The use of black bands for graduates or seniors shows the military influence, an attempt to indicate rank. The present customs in this matter are so varied as to be meaningless.

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[11] Nutting, M. A.: *A Sound Economic Basis for Schools of Nursing.* New York, Putnam's, 1926.

[12] Nutting, M. A.: *Educational Status of Nursing.* Bulletin No. 7, U.S. Bureau of Education, 1912.

[13] Personal correspondence with Mrs. Christopher Wyatt (Euphemia Van Rensselaer Wyatt.)

NURSE AUTHORS

In the early years of nursing, practically all textbooks used by nurses were written by doctors. Miss Nightingale's *Notes on Nursing* (1859) probably did much to make nurses feel that they were capable of writing their own textbooks.

Figure 233. Clara Weeks-Shaw. (Taken about the time her *Textbook of Nursing* was published.)

With the exception of the texts, Bellevue Training School's *Handbook of Nursing,* 1878, and Connecticut Training School's *Handbook on Nursing,* 1879, which were the joint work of doctors and nurses and used for thirty years, the first nursing textbook in America was written by Mrs. Clara Weeks-Shaw, a graduate of the New York Hospital.

Clara S. Weeks's *A Textbook of Nursing,* 1885, was the first real textbook in nursing and made the distinction between true nursing care and the mere execution of the doctors' orders.

Diana C. Kimber has been credited with writing the *first textbook on anatomy for nurses in 1893.* She was born in Oxfordshire, England. She came to New York and entered Bellevue Training School in 1884 after receiving an excellent liberal education both in England and in Germany. The teaching field attracted her and, feeling the need for a textbook on anatomy, undertook the assignment of writing one. It was the *first scientific book written by a nurse for*

Figure 234. Diana C. Kimber. (Courtesy of American Nurses' Association.)

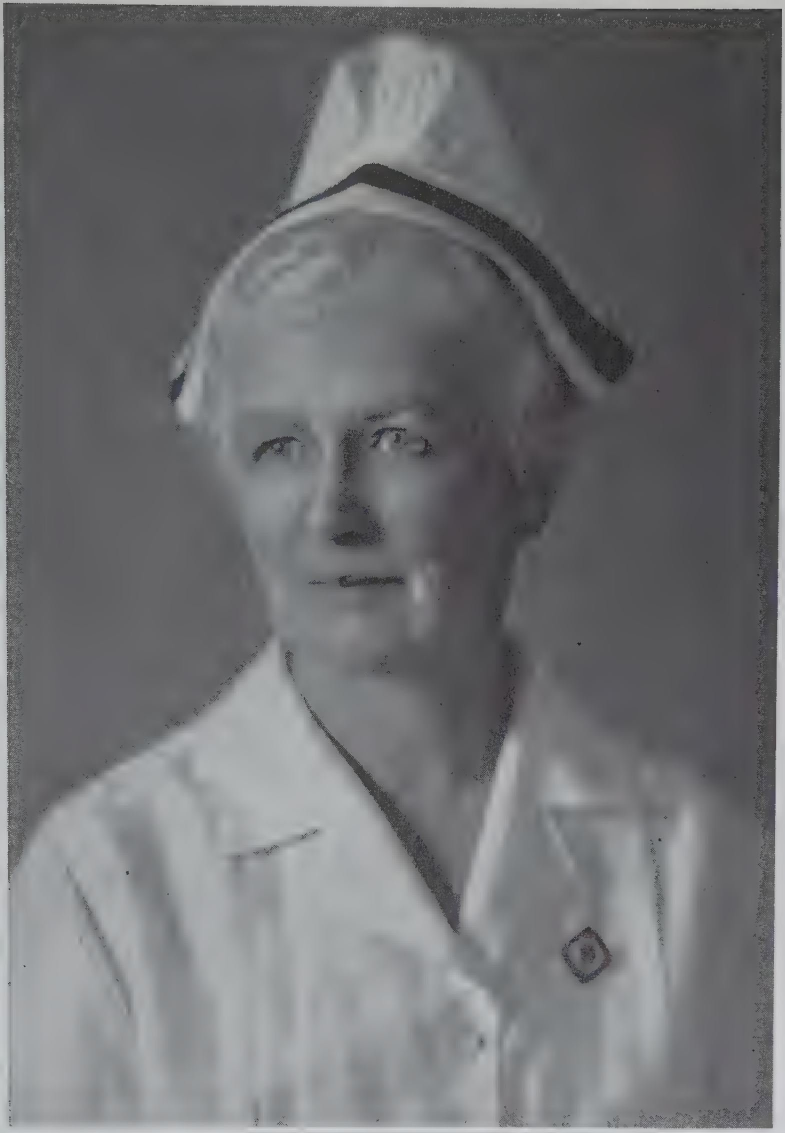

Figure 235. Minnie Goodnow.

nurses. She returned to England in 1898, entering an Anglican nursing sisterhood. From this spiritual environment, she went forth to care for the sick poor in their homes, carrying out her high ideals of service.

Minnie Goodnow, well known author, educator, war nurse, and administrator, was one of the pioneers in the field of textbook writing. She wrote the first textbook on chemistry for nurses in the United States in 1911, this well known *Nursing History* in 1916[14] and the first *Physics for Nurses* in 1919. Miss Goodnow saw active service overseas during World War I and had a colorful background as an administrator for over forty years. She died in 1952.

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[14] This book was revised at frequent intervals until her death.

Figure 236. Bertha Harmer, R.N., B.S., M.A.

Figure 237. Carolyn E. Gray. (Courtesy of the National League of Nursing Education.)

Bertha Harmer was a graduate of Toronto General Hospital. She received the degrees of B.S. and M.A. from Columbia University and was instructor of St. Luke's Hospital, New York City. Assisting in organizing the Yale School of Nursing, Miss Harmer was one of its professors. For some years she was in charge of the Graduate School of Nursing at McGill University, Montreal. She wrote a textbook on the principles and practice of nursing. She died in 1934.

Carolyn Gray, a graduate of New York City Hospital received a B.S. and M.A. at Columbia, did pioneer work at Gouverneur and Fordham Hospitals, held many offices in the New York and national nursing associations and was professor of Nursing Education at Western Reserve University, in addition to revising Diana Kimber's textbook. She died in 1938.

Lavinia Dock's Textbook on Materia Medica for Nurses published in 1890 was another milestone. Miss Dock graduated from Bellevue Hospital in 1886. She held executive positions in Bellevue, Johns Hopkins and the Illinois Training School, and worked long at the Henry Street Settlement. She was for a long time Secretary of the International Council of Nurses and one of its chief promoters.

The first general history of nursing, with the exception of two pamphlets, was written by Americans, M. Adelaide Nutting and Lavinia L. Dock. Its four volumes have constituted a standard reference. The school at Johns Hopkins University, Baltimore, was the first to put the history of nursing definitely into its curriculum.

Lavinia L. Dock (1858–1956), was one of the great women in nursing history, who contributed to the improvement of status of women and was active in many movements contributing to social welfare.

SOCIAL SERVICE

The closing years of the nineteenth century saw a resurgence of *humanitarianism.* Many individuals and groups endeavored to relieve the physical and social sufferings of others.

Leprosy continued to plague many people, and although its name has been changed to Hansen's disease, devoted care for its victims is still needed.

In 1873 Father Damien de Veuster (1840–1889), a young Belgian priest, requested to be sent as a missionary to Molokai. Single-handed he cheered his heartsick victims, built homes for them, nursed them, and buried them. Thus began the magnificent story of courage, devotion, and sacrifice that remained an inspiration to patients and followers in his footsteps.

In 1894, the State of Louisiana realized the need for a place to care for the many victims of leprosy. Money was raised, an abandoned sugar plantation was purchased, and a physician, Dr. L. A. Wailes, volunteered to take care of the lepers, but realizing very soon that more assistance was needed, he resigned. *The Sisters of Charity of St. Vincent de Paul* received the petition for help, and the nuns offered to send some members of their community. Sister Beatrice, a trained nurse from Boston, joined four other nuns and took over the settlement. Their excellent work has been done in a spirit of devotion. In 1917, Congress passed a law authorizing the purchase of this institution and named it the *National Leprosarium.* Because of World War I, this transfer was not completed until 1921. The Sisters of Charity have remained an integral part of the staff although they were originally the only staff personnel.

William Booth (1829–1912) was an ardent religious leader who was fired with enthusiasm to rescue poor souls who were living in the slums of London. He knew that hunger, dirt, and misery needed to be removed before spiritual assistance could be rendered.

In *1878,* he organized and became the first general of the *Salvation Army.* He taught Christian principles and practiced Christian living by giving food, clothing, shelter to the poor as well as aiding them in finding suitable useful work. His labors extended to other lands. The gracious assistance given by his army to the United States' soldiers during World Wars I and II can never be forgotten.

William Booth's book, *In Darkest England and the Way Out* (1890), reflects his belief that to restore a man to humanity was to restore him to God.

The *Settlement House Movement* started at Toynbee Hall in London by Oxford University students who studied community problems and aided in alleviating them.

Jane Addams (1860–1935) graduated from college in 1881. One night two years later, she wandered through London's East End and for the first time saw the slums of a big city. She was determined to do what she could to relieve the problems of city slums. In Chicago in *1889,* she with Ellen Gates Starr purchased a big old house and opened the doors to the neighborhood; this was the beginning of *Hull House.* Help of any sort was available to neighbors. This was the spirit of social service. Jane Addams was a leader in the fight for suffrage for women. She with Nicholas Murray Butler was the recipient of the 1931 Nobel Peace Prize.

Young Men's Christian Association (Y.M.C.A.) was started to develop the spiritual, social, physical, and intellectual well being of men. It was organized in *1844* in London and in *1851 in America.* Physical training has become an important part of the program.

During the Civil War, several branches of the Young Men's Christian Association joined to form the United States Christian Commission for the welfare of soldiers in camps and hospitals. In the First World War, they cared for prisoners as well as providing recreation for the soldiers. In the Second World War, they cooperated with

Figure 238. Dr. Grenfell and his staff at St. Anthony's Hospital, Labrador, 1914.

other agencies to form the United Service Organization (U.S.O.) which planned recreational programs for the armed forces.

The Young Women's Christian Association (Y.W.C.A.) was founded to assist women and girls spiritually, socially, intellectually, and physically. In 1855, Lady Kinnaird in London encouraged a group of women to provide homes for women workers. In *1866,* there was a Young Women's Christian Association in Boston. Local associations spread until it became the vast organization it is. The Young Women's Christian Association units in the country have been a source of housing for women in every large city.

The next humanitarian project was the establishment of the *Grenfell Mission. Sir Wilfred Grenfell* (1865–1940) was an English medical missionary who went to *Labrador in 1892.* He built a chain of hospital centers and nursing stations; established cooperative stores; built schools, libraries, and orphanages. In 1912, the International Grenfell Association consolidated the work of the American, Canadian, and English branches which supported his mission. Sir Wilfred Grenfell supervised the work of his staff and gave assistance by cruising along the coast in the hospital steamer, Strathcona II.

Patients were reached by dogsled in the winter and by boat in the summer. Another amazing project had been developed for the welfare of mankind.

NURSING IN THE SPANISH-AMERICAN WAR (April 21, 1898 to August 12, 1898)

The year was 1898, and American patriotism was being fanned to fever heat by the slogan "Remember the 'Maine.'" The United States battleship "Maine" had been sunk mysteriously on the fifteenth of February in Havana harbor. This was one of the many incidents that finally incited President McKinley to ask Congress for authority to intervene in Cuba's struggle to be free from Spanish control and domination. He was authorized to permit enlistment of volunteers.

There was no organized army nurse corps although training schools were in existence and trained nurses were available; furthermore, there was no system by which nurses could be provided for war service. Congress appropriated the necessary funds and gave the Surgeon General the authority to employ nurses under contract.

The Nurses Associated Alumnae of the United States and Canada (now the American Nurses Association) had been formed for such a short time, and although this was an organization representing the trained nurses of both countries, it was not prepared to undertake the task of listing qualifications or recruiting nurses for this war service.

A physician, *Dr. Anita Newcomb McGee,* was the person who assumed the task. Through her prompting, the Surgeon General asked the Daughters of the American Revolution to carry out the procurement of nurses. The Surgeon General felt that nurses would not be needed because military surgeons were opposed to their presence in military hospitals. The gentle but firm insistence of Dr. McGee won out, and as she was vice president of the Daughters of the American Revolution the offer to recruit was accepted. Dr. McGee established standards of admission to the service as well as a valuable system of keeping records. Credentials were evaluated, statements being obtained from schools from which the applicant graduated, as well as a certificate of good reputation.

Nurses were recruited and they were needed desperately not so much because of war casualities but because of the typhoid fever that afflicted many of the soldiers in camp. Other communicable diseases that threatened the troops in Cuba were yellow fever, malaria, and dysentery.

When Dr. McGee was appointed Acting Assistant Surgeon General, she was responsible for the Army Nurse Division. At this time she terminated the assistance of the Daughters of the American Revolution. The efforts of Dr. McGee and the excellence of the work of the nurses in this war led to the establishment of a permanent Army Nurse Corps. Commenting on the achievements of the nurses in general one was quoted as saying, "When you were coming, we did not know what we would do with you. Now we do not know what we would have done without you."

Many members of the Associated Alumnae and many women prominent in the nursing world served in the war. (Among these were Mary Gladwin, Eugenie Hibbard, Esther Hasson and Anna Maxwell.) A total of nearly 1600 graduate nurses served.

These army nurses invariably won the esteem and recognition of the officers and men. Their supporters included the surgeons who had originally been most prejudiced against them. The continued employment of women as army nurses was undoubtedly due to the skill and devotion which they showed at the time of the Spanish-American War.

Figure 239. Dr. Anita Newcomb McGee.

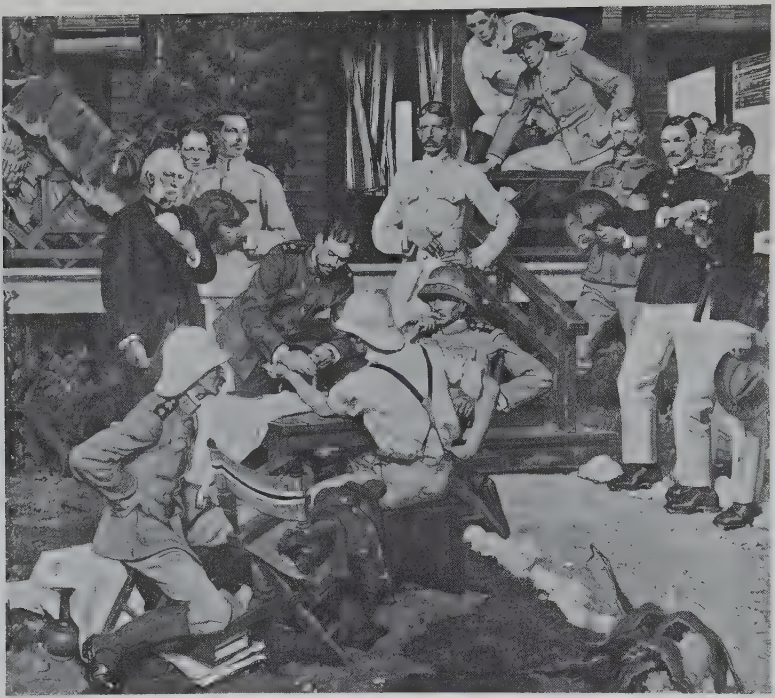

Figure 240. With Major Walter Reed and Dr. Carlos Finlay among the spectators, Dr. Lazear inoculates Dr. Carroll with an infected mosquito, August 27, 1900. (Courtesy of Wyeth Laboratories.)

During the Spanish American War, a military physician, *Major Walter Reed,* was appointed chief of a committee to study the cause and spread of typhoid fever in the army camps. After much searching, it was determined that flies aided by unclean practices in general were the most obvious source of contamination.

At the end of the war, it was apparent that disease had taken a heavier toll of lives than the bullets of the enemy. Yellow fever had been a particularly virulent and fatal enemy. Burning sulfur candles as a means of prevention of this disease did not appear to be successful. When a person died, all his personal effects, called "fomites," were burned. This could include even the burning of his home. This was still no solution to the problem. The United States government sent physicians to *Cuba* with the assignment of finding some method of control of this malady that had been endemic in Havana for more than two hundred years. The physicians were *Drs. James Carroll, Aristides Agramonte, Jesse W. Lazear, and Walter Reed.*

Dr. Carlos Finlay, a Havana physician, had been striving for nineteen years to convince his medical colleagues that yellow fever was caused by a common house mosquito. Major Walter Reed and Dr. Agramonte consulted Dr. Finlay who shared his theories about yellow fever and even gave them a supply of mosquito larvae of the suspected species. Human volunteers were needed.

Heroic Americans volunteered, and the first ones were doctors. Some survived while others died, martyrs to the cause of science. The experiments proved that yellow fever was transmitted by the bite of the mosquito now called *Aëdes aegypti.*

One of the unsung heroines of this scientific project was a nurse, *Clara Louise Maass*

(1876–1901), who lost her life in the yellow fever experiments in Cuba and was accorded full military honors.

Miss Maass entered the Newark German Hospital Training School for Nurses (Lutheran Memorial Hospital, Newark, New Jersey) in 1893 and graduated in 1895. She was one of the first to volunteer to care for the sick and wounded soldiers in army camps in this country and in Cuba. She responded to the call for nurses in the government hospitals in the Philippines and was stationed at Manila. Her patients were critically ill from typhoid fever, smallpox, and yellow fever. She was distressed that there was no method of prevention or cure for these diseases.

In 1901, Clara Maass returned to Cuba and was employed by the sanitary department of Havana. She was assigned to a hospital which was an innoculation station for the yellow fever experimentation. She volunteered and succumbed to the treacherous affliction. The epitaph on her monument reads: "Greater love hath no man than this, that a man lay down his life for his friends."

PUBLIC HEALTH NURSING

In Liverpool, England, in 1859, after a lengthy illness, the wife of *William Rathbone* died. Mrs. Rathbone had all the comforts that wealth and affection could provide. In his grief, Mr. Rathbone pondered the predicament of the poor families bereft of money and comfortable surroundings who might be faced with long-term sickness. Mrs. Mary Robinson, the nurse who had been such a comfort to his wife and the Rathbone family, was asked to try an experiment for three months. She was to give nursing care and comfort to poor patients and was given the necessary appliances for usual bedside care as well as medicines and nourishing foods. Included in her assignment was the responsibility to teach families to improve their standard of living.

The conditions Mrs. Robinson found were worse than anything she could have imagined, and in despair she returned after one month to Mr. Rathbone to resign from her assignment. After much persuasion on his part, she returned and continued in her project.

Mr. Rathbone believed in the value of personal service in relieving the needs of the poor. He convinced the Liverpool Relief Society to adopt a system of dividing towns into districts and districts into sections. To each district a committee of "Friendly Visitors" was assigned. Initial inquiries were conducted by paid agents before the case was turned over to the care of the friendly visitor of that section, to be handled with tact and kindness. Mr. Rathbone's book, *Social Organization of Effort in Works of Benevolence and Public Charity by a Man of Business,* presented his beliefs and suggestions for social welfare.

He was convinced of the need and value of district nursing. He felt that many persons with long-term illnesses would not be admitted to a general hospital, that many patients preferred to stay at home with their loved ones, that there were not enough hospitals available to meet the demands made upon them, and that the cost was far less when the patient stayed at home. These were urgent reasons for action in the development of district nursing.

Mr. Rathbone consulted Miss Nightingale who encouraged him to organize a training school for nurses in the Liverpool Royal Infirmary. There would be a dual benefit of improving the nursing care within the hospital and of providing nurses for the sick of the community. Mr. Rathbone had constructed a home for nurses, and he presented it to the Royal Infirmary; this solved a housing problem. In 1862, the

Training School and Home for Nurses of the Royal Infirmary began the program of providing nurses for the hospital, private duty, and district nurses.

By 1865 in the town of Derby in England, a trained nurse was placed as a "Lady Superintendent" in charge of all district nursing units to supervise the quality of the nursing care they gave.

An interesting project developed in relation to *Mrs. Ranyard's Bible and Domestic Mission* which she had organized in 1857. The Bible women visited the poor to read to them and pray with them. These eager women recognized the need for being prepared to minister to ever present physical needs as well as the spiritual. Finally, in 1868, the nurses' branch of the mission was established in London. After proper preparation as a Bible woman, there followed three months' training in the medical and surgical wards of the hospital plus a month's training in obstetrics. No classes seem to have been given, for mere presence in the hospital setting seemed all the preparation that was available. Caring for patients with contagious diseases was not permitted because of the danger of spreading infection.

In 1874, a committee was established in London called *The National Association for Providing Trained Nurses for the Sick Poor.* The objective of this group was to improve the quantity and quality of nursing care. The committee developed a logical plan for solving this problem by (1) determining what nurses were available; (2) what preparation was needed; and (3) how other groups had handled this problem.

Miss Lees, a pupil of Florence Nightingale, was placed in charge of investigation. About seven to eight hundred letters were sent to clergymen and medical officers in London. Data revealed great need for nurses, but personal interviews showed that district nurses had poor preparation, if any. The cases presented the ways by which nurses carried infection from one house to another.

The conclusions of this committee were: (1) There was need for more district nurses. (2) Hospital nurses training schools should provide preparation for care of the sick in their homes. (3) Under the prevailing system there was too much emphasis on distribution of alms, which was not nursing, and too little on giving nursing care. (4) Nurses needed to be given guidance, direction, and supervision; (5) There was too little consultation between nurses and doctors in planning for patient care. (6) There was much too little teaching given to the patient and his family.

After reviewing their conclusions, the following proposals were drawn up: (1) An independent training school should be established in close proximity to a hospital similar to Miss Nightingale's school and its relationship to St. Thomas' Hospital but under the control of the trustees of the school. (2) Close to the hospital would be needed a district home where four to six nurses could live with a superintendent (supervisor). After the year's training in the hospital, a three months' apprenticeship would be given in district nursing. (3) Payment should be obtained for this service, provided a patient could afford to pay. This would permit many patients to receive care who were equally in need of as well as deserving of this service—like poverty-stricken families—but who were unable to procure it. (4) An alternative plan was presented in case the above suggestions were not acceptable or feasible. A superintendent could be appointed to manage a less elaborate but essentially identical program without developing the special training school.

This remarkable report was published in 1875 and received favorable attention by the public. The fourth suggestion was adopted, and Miss Lees was appointed Superintendent. Many gentlewomen were recruited because it was Miss Lees's belief that this type of nursing required the highest type of women who were well educated to demonstrate the actual nursing care which involved teaching opportunities. This organized effort was called *The Metropolitan and National Nursing Association for Providing Trained Nurses for the Sick Poor.*

The uniform adopted and worn by the Metropolitan Nurses was a dress of brown trimmed with dark blue linen, with large apron and oversleeves of the same material to be worn when on duty. The outdoor uniform consisted of a large dark blue cloak, blue alpaca being worn in summer, and a black straw bonnet, trimmed with black silk and piped with pale blue silk, lined with white muslin with a stiffly crimped muslin border and wide white muslin strings, completed the uniform. Then, bonnets were worn when on duty. A leather bag was pinned to the uniform and contained pin cushion, scissors, and dressing forceps. Each nurse carried a small leather handbag containing disinfectants, hand towel, soap and surgical dressings.

The training of these nurses was the important function of this Association. Miss Lees selected applicants with care, and they remained in the Central Office for one month under observation as they accompanied a more experienced nurse on calls. If these women were considered suitable, they went into the hospital for one year and then returned for a six months' course in district nursing under the guidance of the superintendent (supervisor) who went with her on each new case, teaching her how to care for each patient. This appears to have been a good use of the apprenticeship system.

Special classes were given in anatomy, physiology, hygiene, diseases of women and ways of peptonizing foods. Examinations had to be passed after the completion of the classes.

This experiment proved successful. Better educational methods, added to greater individual intellectual capacity showed the phenomenal progress which Miss Lees (then Mrs. Dacre Craven) incorporated into her address given at the World's Fair in Chicago.

> District nurses should feel themselves beyond and before all things, the servants of the sick poor. They instruct—but practically and by example. District nursing means, the care of the sick poor in their own homes, where there are no proper appliances, and where the nurse can rarely see the doctor,—in some cases, not at all. She must know how to put the room of each patient into such good sanitary condition that the patient may have a fair chance of recovery, and how to extemporize hospital appliances where these are required. She must be so well trained in nursing duties as not only to know how to observe and report correctly on every case under her charge, but to allow no change to pass unnoticed; and to be able to apply, provisionally, suitable treatment, until the medical man shall have arrived. She must know how to purify the foul air of the room without making a draught; to dust without making a dust; to ice drinks without ice; to filter water without a filter; to bake without an oven . . . She must be content to be servant and teacher by turns. . . . A district nurse must have a real love for the poor and a real desire to lessen the misery she may see among them; and such tact as well as skill that she will do what is best for her patients even against their will. No district nurse should ever give alms or relief of any kind, beyond the highest of all—that of nursing service. . . . A nurse's business is to nurse—but she has also to teach the poor those sanitary laws which are household words with the well-to-do.[15]

This important groundwork for the development of community nursing had been laid. Another opportunity was presented when *Queen Victoria* celebrated the fiftieth anniversary of her reign as Queen. Of the 76,000 pounds (£) raised by the women of England, 70,000 pounds (£) were used to establish the Institute for the Training and Supervising of District Nurses. Properly qualified nursing associations already in existence were given an opportunity to affiliate. This consolidation would upgrade and standardize the community nursing service. A form for affiliation was devised.

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[15] Proceedings of the International Congress of Nurses, 1893.

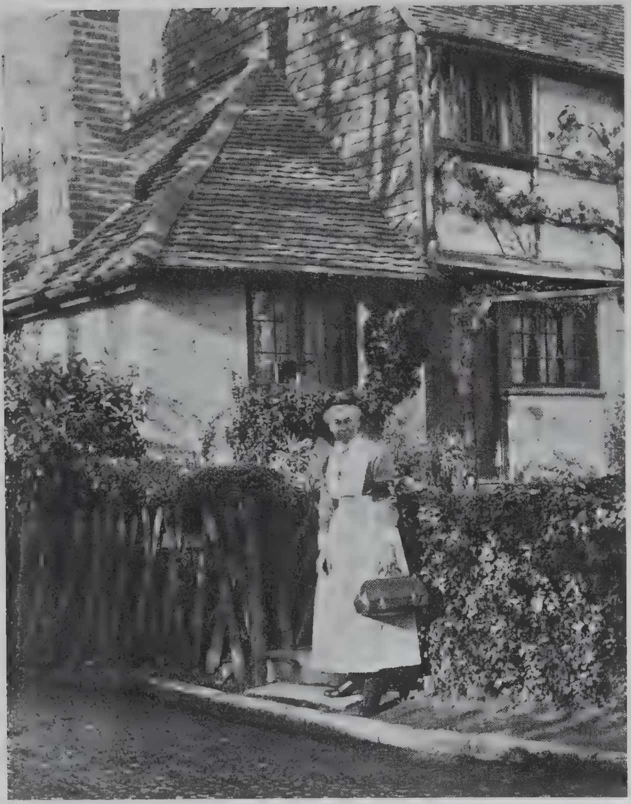

Figure 241. A Queen's Nurse. (From Brainard, A.M.: *The Evolution of Public Health Nursing.*)

In 1889, the *Queen Victoria Jubilee Institute for Nurses* was founded by royal charter. This Institute was connected with the historically famous St. Katherine's Hospital, founded by Queen Matilda in 1148. This group of nurses was called "Jubilee Institute Nurses" but became known as the *"Queen's Nurses."*

In addition to the plan for preparation of these nurses which resembled the one developed by Miss Lees, there was special training available for those who would work in the rural areas. This program ranged from four to eighteen months according to the background of the individual and was given at the "Maternity Charity and District Nurses' Home." This type of preparation provided trained nurses and midwives.

In America, after the War of 1812 which left wives and children without a breadwinner and after the devastation and death wrought by the epidemics of yellow fever, a *Ladies' Benevolent Society* was organized for the relief of persons suffering from anguish, sickness, and poverty. Cases were investigated, relief was given in proportion to needs, and work was provided for the unemployed.

By 1832, Dr. Joseph Warrington had organized the society of *Lying-in Charity for Attending Indigent Women in Their Homes.* This group instructed prudent women as nurses.

By 1877, the *Woman's Board of the New York City Mission* recognized the need for nurses to go into the homes of the poor to care for physical needs as much as their missionary members cared for spiritual needs. These nurses received their training at Bellevue.

The *Visiting Nurse Society of Philadelphia* employed nurses to care for the sick in their homes in 1886. The service was extended to persons of modern means who paid as well as for the poor to whom the care was given free. A uniform was adpoted in 1887, and in 1891 Miss Linda Richards assumed charge of the Philadelphia Visiting Nurse Society.

In 1886, the *Instructive District Nursing Association* was founded in Boston, Massachusetts. Teaching was an important aspect of the home care of the sick and the principles of hygiene, sanitation as well as health subjects and aspects of illness were taught. These nurses were under the aegis of the physicians of the outpatient department of the Boston Dispensary. The Instructive District Nursing Association was the first to recognize the educational opportunities in visiting nursing.

Annie Brainard[16] has said:

> It was a fortunate thing that the first District Nursing Association in America should have laid such stress on the educational side of the work, and as proof that their attitude was accepted by America as the right and proper one, we may cite the words of Isabel Hampton (the late Mrs. Robb) who five years later in an address to the International Congress of Nurses (1893) said: "In District Nursing we are confronted with conditions which require the highest order of work, but the actual nursing of the patient is the least part of what her work and influence should be among the class which the nurse will meet with. To this branch of nursing no more appropriate name can be given than 'Instructive Nursing,' for educational in the best sense of the word it should be." Truly a great advance from the attitude of the missionary nurses so short a time before!

By 1889, the *Chicago Visiting Nursing Association* was another early agency. A white Maltese cross was sewn on the sleeve of the uniform of each nurse member of this agency. Miss Edna Foley, a graduate of Hartford Hospital, was one of the early superintendents of this public health nursing agency in Chicago. She was the author of the Visiting Nurse Manual and president of the National Organization for Public Health Nursing from 1920–1921.

Another pioneering endeavor was the course in public health nursing given by the *University of Michigan* to provide instruction for students who were engaged in field work with the Detroit Department of Health as well as those with the Visiting Nurse Service.

Lillian D. Wald (1867–1940), who graduated from the New York Hospital Training School for Nurses in 1891, was shocked by the neglect of a woman in a back tenement who was critically ill in unbelievably distressing surroundings. Miss Wald conceived the idea of establishing a neighborhood nursing service for the sick poor of the lower East Side in New York City.

She was fortunate in interesting two prominent and wealthy lay persons, Mrs. Solomon Loeb and Jacob H. Schiff, and, of course, she had the encouragement and support of her classmate in nursing, *Mary Brewster.* The first setting for the world-famous *Henry Street Settlement* was opened in 1893 on the top floor of a tenement on the lower East Side.

Duffus[17] entitled his biography of Lillian Wald *Neighbor and Crusader,* and this is well named for neighborliness was her motivating thought and approach as she carried on her intensive crusade of assistance of the less fortunate. Her concept was that the visit should be like that of a really interested friend, rather than that of an impersonal, paid visitor.

At the close of the second year, the experiment's having been successful, this organization moved into a house on Henry Street purchased by Mr. Schiff. Here there was added to the already existing personnel, both nurses and social workers. In due time there was an organized program of

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[16] Brainard, Annie M.: *The Evolution of Public Health Nursing.* Philadelphia, W. B. Saunders Co., 1922, p. 208.

[17] Duffus, R. L.: *Lillian Wald, Neighbor and Crusader.* New York, The Macmillan Co., 1938.

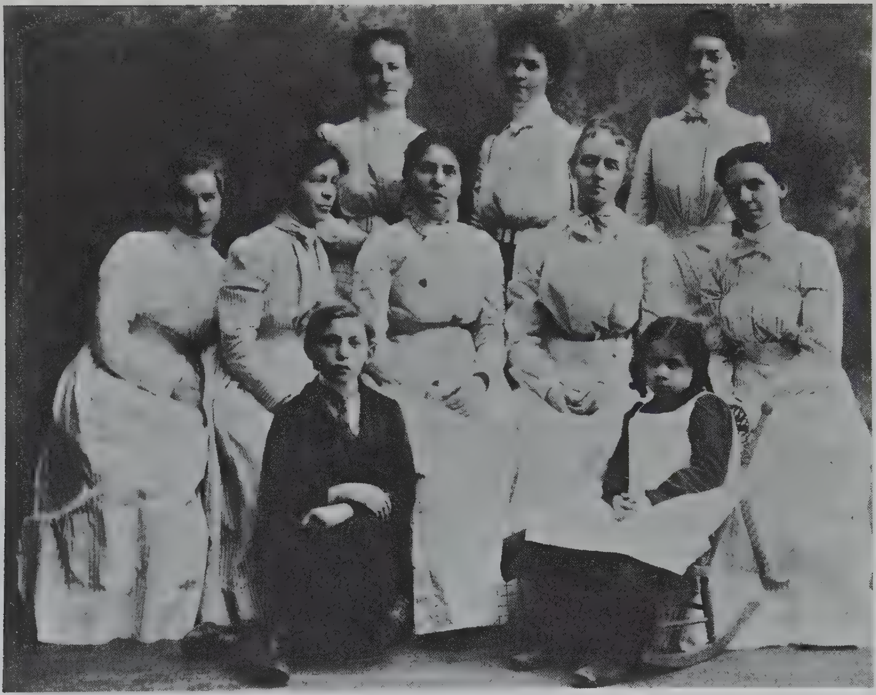

Figure 242. Lillian Ward and her staff. She is seated in the middle of the second row with Lavinia Dock to her right. (Courtesy of the Visiting Nurse Service of New York.)

social and educational activities in addition to the nursing service. It became a *generalized social settlement project.*

As nursing in general and community nursing in particular enlarged its concept of duties and opportunities, more nurses with special assignments and preparation were needed. Nurses were specializing in maternity, in infant welfare, and tuberculosis work. Gradually, there came to be an overlapping of functions with several nurses working in the same household at the same time; this was a most disturbing situation for everyone including the perplexed family. Eventually, there was a plan developed for all nursing to be of a general nature with supervisors who had specialized preparation and who acted as resource persons for nurses who needed special instruction in the care of patients.

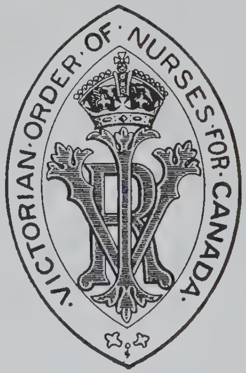
VICTORIAN · ORDER · OF · NURSES · FOR · CANADA ·

Figure 243. Emblem of the Victorian Order.

There were *public health nurses* in Canada from about 1885. The work became highly developed under the Victorian Order and was for some years considered superior to almost any other in the world.

> The Victorian Order nurses go into the simple homes in the little fishing villages in Nova Scotia and Cape Breton; into the workingman's cottages in the larger towns; into the tenements in the cruel slums of our larger cities; into the schools, the milk stations, the homes where tuberculosis holds its victims; into the little hospitals, away up in the mining towns or out on the beautiful prairies; out into the ranches in the ever lovely foothill region, where they become the

Figure 244. Lieut. Col. E. L. Smellie, Matron-in-Chief, Royal Canadian Army Medical Corps. (Courtesy of *The Canadian Nurse.*)

country nurses; or into the tiny hospitals in the mountains, and away out to the Pacific coast branches. The Victorian Order nurse seems to fit into her particular corner as if she had been there all her life and it was good to be there. The committees, with hardly an exception, work as though their existence depended on the results, throwing all their energies into the service and loving their work.

Practically all public health nursing in Canada has been conducted by the *Victorian Order of Nurses for Canada.* Founded in 1897 by Lady Aberdeen, its name came from the fact that that year was Queen Victoria's Diamond Jubilee.

The order's work has been threefold: (*a*) public health nursing, chiefly in cities; (*b*) the Lady Minto Cottage Hospital Fund for small hospitals in outlying and thinly populated districts; (*c*) the Lady Grey Country District Nursing Scheme for visiting nurse care in Canada's many sparsely settled places, including work among the Indians. The order has always had much lay interest and support.

Elizabeth Smellie, member of the original V. O. N. committee, was for many years head of the order, and organized the Canadian Women's Army Corps during World War II, similar to the U. S. WAC.

SCHOOL NURSING

In 1891 at the International Congress of Hygiene and Demography, Dr. Malcolm Morris proposed that a staff of specially educated nurses should visit the elementary schools regularly to examine the children. In 1892 school nursing was introduced into the school system in London. *Amy Hughes* accepted the invitation to become the first school nurse. She had been superintendent of the Queen's Nurses. It was not until 1907 that an act was passed which provided for medical inspection of schoolchildren in England.

By 1902, Lillian Wald encouraged the use of nurses to supplement the work of doctors in the schools of New York. *Lina Rogers* was sent from the Henry Street Settlement to a school on a one-month trial basis. She visited four schools a day, spending about one hour in each school with follow-up visits in the homes. This experiment was a successful one and dispensaries were improvised with supplies being furnished by the Board of Education. The nurses who were sent to assume this assignment felt the need for better education.

TUBERCULOSIS NURSING

We have already seen that tuberculosis was called consumption, that it claimed the lives of many persons in this century, and that since Robert Koch had discovered the causative organism in 1882, tuberculosis was known to be communicable but curable. The need for instruction by the visiting nurse was essential for preventive as well as curative measures. It was declared necessary to detect cases of tuberculosis in order to prevent the spread of the disease, and Dr. William Osler was the motivating force behind a project to carry out plans to do this.

In 1899, one of the women medical students at Johns Hopkins was selected to do follow-up work with dispensary patients in their homes. Through Dr. Osler's prompting, in 1900 the *Laënnec Society of Baltimore* was founded. It disseminated information of the disease to the public. By 1903, a nurse replaced the medical student and gave complete home care, which included instruction for the patient and his family. In 1910 work with tuberculosis patients was absorbed by the City Boards of Health. By 1904, the National Association for the Study and Prevention of Tuberculosis had been organized; by 1907, the Boston Consumptives' Hospital had developed a tuberculosis visiting nursing group within its Out-Patient Department; and, by 1908, an affiliation had become effective between the nursing staff and the Boston School for Social Workers.

Figure 245. The baby welfare nurse. (Brainard, A. M.: *The Evolution of Public Health Nursing*, 1922.)

INFANT WELFARE

Marked progress had been noted in interest in the welfare of infants and contributions toward their care. The *Crèche,* a type of day nursery for the care of poor babies, was established through the efforts of the Mayor of Paris in 1844.

During these later years of the nineteenth century, it was realized that one of the major reasons for such a high infant mortality rate was the milk used in the feeding of infants. It was essential to obtain a pure supply of cow's milk.

In 1889, two milk distribution centers were constructed, one in New York City and one in Germany. The objective was to provide clean milk for only poor sick babies. This project was of relatively little value because after the child became well the supply of impure milk had to be used, and sickness returned.

INDUSTRIAL NURSING

The Proctor Marble Company in Vermont was purported to be the first industrial plant to employ a nurse in 1895 to visit and give nursing care to their sick employees.

Another early project was the Employees Benefit Association of John Wanamakers' department store in New York City; this was established in 1897.

It was well into the twentieth century before public health nursing was emphasized in the basic course.

The Waltham (Mass.) *Training School,* established in 1885 by Dr. Alfred Worcester after conferences with Florence Nightingale, was designed to train nurses for private duty, giving experience in homes. Early, however, it added *public health nursing* with field practice to the students' course. At first there was no hospital, but a well equipped school building and dormitory. *Charlotte MacLeod,* who had been head of the Victorian Order of Canada, was in charge for several years.

This school was much criticized for sending its students to nurse in private homes (since at that time other hospitals were exploiting their students by this means) to earn money for the hospitals. The students were usually overworked and unsupervised. Waltham had special, full-time supervisors for this purpose, to see that the students were not overworked and that they attended classes. Its graduates were refused registration for a long time because of this practice, though it was admitted that they were superior nurses.

CANCER NURSING

Rose Hawthorne Lathrop (1851–1926), the brilliant and beautiful daughter of Na-

Figure 246. Charlotte MacLeod, of the Victorian Order of Canada, and the Waltham Training School of Massachusetts.

thaniel Hawthorne, the famous contributor to American literature, has been credited with carrying on the most successful campaign in the interests of patients suffering with cancer. In the early 1890's, she visited her seamstress, who was dying of cancer on New York's Welfare Island. She was appalled at the poor care these victims received, at their anguish which was not relieved by any kind of emotional support, and at the absence of human love throughout their days of illness but especially at the time of death.

It became apparent that patients afflicted with cancer which was incurable were not wanted in hospitals and in many instances were not permitted to remain in their own homes.

Rose Hawthorne Lathrop determined to be of assistance to the poor victims of this serious malady that was not understood. She received three months' training in simple nursing techniques and in the care of cancer victims. Her next step was to hire a tenement in the slum sections where she could be closer to those patients who needed her.

In 1898, an artist friend of Rose's named *Alice Huber* joined her in her work. Large quarters were needed to provide accom-

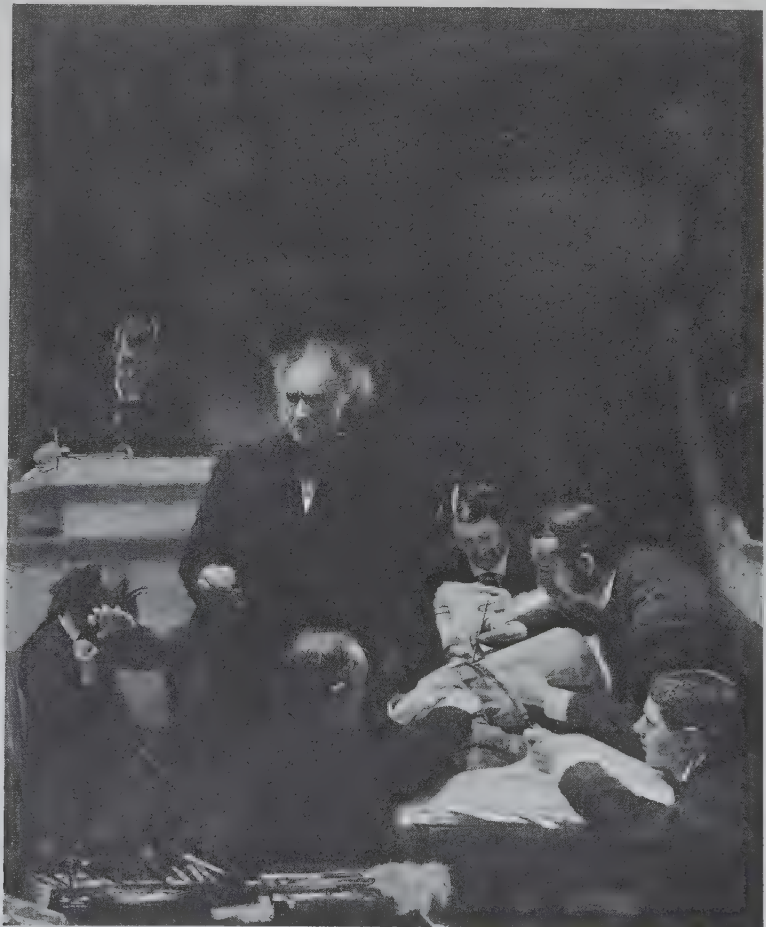

Figure 247. The Gross Clinic, by Thomas Eakins (1875). (Courtesy of Jefferson Medical College, Philadelphia, Pa.)

modations to make it easier to give nursing care when it was needed. They purchased a three-story brick building at 426 Cherry Street in New York City and over the door they placed the sign: "St. Rose's Free Home for Incurable Cancer," and the quotation: "I was sick and ye visited Me." Both Rose and Alice had become members of the Third Order of St. Dominic.

Gradually, the demand for more nurses became evident and Rose Hawthorne Lathrop became the foundress of the order of sisters called *Servants of Relief for Incurable Cancer* which was a branch of the Dominican Order. The membership of her religious family grew as did the hospitals that they built and so did the quality of care rendered to many more patients. Of her work Rose once wrote:

> I am trying to serve the poor as a servant. I wish to serve the cancerous poor because they are avoided more than any other class of sufferers; and I wish to go to them as a poor creature myself, though able to help them through gifts from friends and relatives and public kindness. It is by humility and sacrifice alone that we feel the holy spirit of pity.

In this century, there was a phenomenal pooling of brain power on an international basis from various academic disciplines, all aiming to relieve suffering humanity which was universal in scope.

Thomas Eakins (1844–1916), a famous American painter, has left two paintings which present the remarkable progress made in the scientific basis of patient care in the last quarter of the nineteenth century.

The first painting, the *Gross Clinic* (1875), presents grand rounds with Dr. Gross explaining to medical students the surgical operation that is being performed. He appears to be completely oblivious of the feelings of the patient who does not seem to be draped, and of the agonizing horror of the patient's mother who sits at the right of Dr. Gross.

The second picture, the *Agnew Clinic* (1898), presents Dr. Agnew presiding at

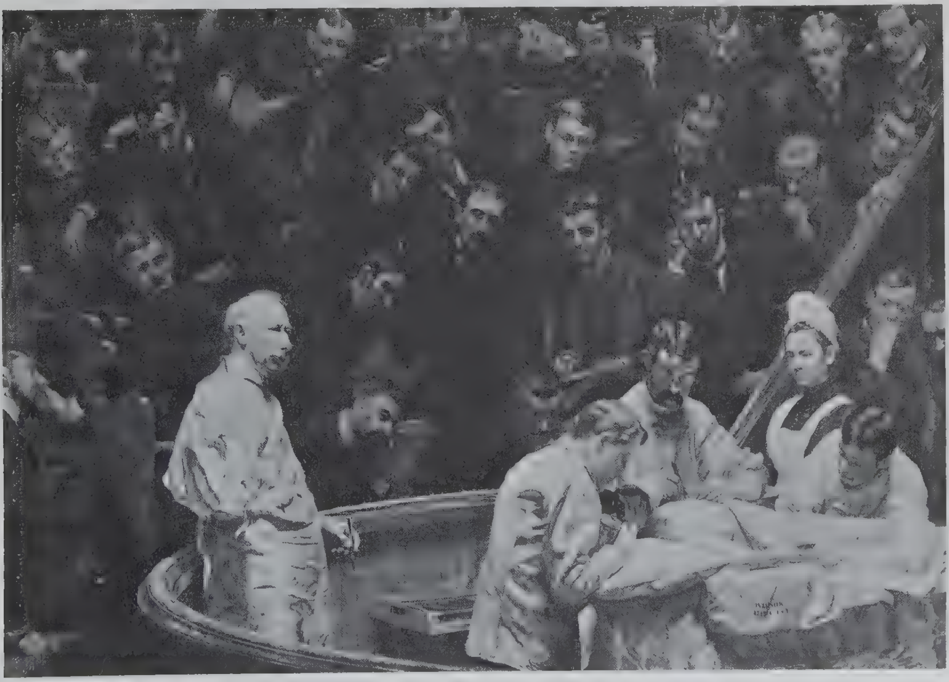

Figure 248. The Agnew Clinic, by Thomas Eakins (1898). (Courtesy of Philadelphia Museum of Art.)

grand rounds. The setting for both pictures is presumably a surgical clinical amphitheater, the audience presumably medical students, but the scene has changed definitely in the years from 1875 to 1898. The concepts presented as a result of the scientific investigations of Pasteur, Koch and Lister have made the surgeons aware of the necessity of shedding their street clothes and replacing them with white operating gowns; the instruments appear to be bathed in carbolic acid solution; the patient is covered; the anesthetist is giving ether (note the can of ether in his hand and the ether cone over the patient's nose and mouth) so that the advantageous use of ether by Dr. Morton has been heralded; and since schools of nursing have been opened a nurse appears in the operating room but not as an assistant to the surgeons.

The full impact of the necessity of surgical aseptic technique had not been comprehended or was not being practiced.

Aids to Enrich an Understanding of This Period

I. Visit a historic shrine and/or one of the hospitals made famous by early leaders in nursing, or a museum where implements and utensils used in the care of the sick in this period are displayed.
II. Prepare a report about an historical novel, essay, letters, poem, or a "personal experience" acquaintance with this century.
III. Construct a diorama of a sickroom scene in one of the early hospitals in the United States.
IV. Prepare a scrapbook showing the contributions in the field of biological, physical and medical science, including a biographical and/or artistic sketch of the scientific leaders in this period.

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XII

The Twentieth Century

A careful survey of this century reveals the penetration of every area of the earth as well as the exploration of outer space which has introduced the new science of astronautics.

This two thirds of the twentieth century has witnessed a phenomenal increase in the standard of living, lengthening of the span of life, the identification of the causes of many diseases, the ability to conquer most bacterial diseases and the provision for a much more scientific plan of care for the patient and his family. In this century, the center of medical care has been the hospital, and the preventive and rehabilitative as well as the curative aspects of patient care have received attention. The influence of wars, the marked progress in transportation and communication, the remarkable inventions, along with scientific achievements, have had an influence on keeping individuals healthy, on initiat-

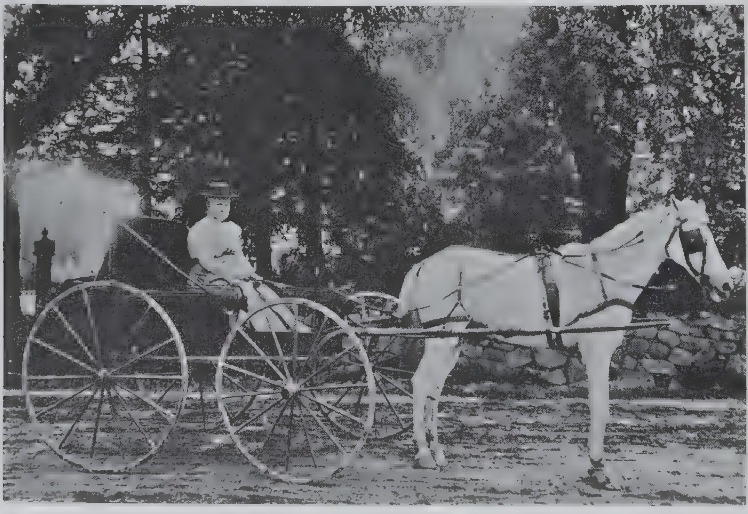

Figure 249. A district nurse in the Westchester area of the Bronx, New York, *ca.* 1903. (Courtesy of the Visiting Nurse Service of New York.)

ing changing patterns of the care of the sick, on the expansion of the field of medicine in general and on the refinement of nursing in particular.

The past years have presented the transition from candlelight to satellite, from the horse and buggy era to the jet age, from only the laying on of hands to the inclusion of impersonal electronic monitoring. The struggle for freedom and independence of new nations, the trauma of international tensions and threat to survival itself all have played a part in writing the current history of society.

PROGRESS IN TRANSPORTATION, COMMUNICATION, AND OTHER TECHNOLOGICAL AREAS

Thomas A. Edison (1847–1931) had invented the incandescent lamp in 1879, providing stimulus for research in many technical areas. Petroleum was a necessary ingredient for industrial growth. The first oil well had been dug and set in place in Pennsylvania in 1859. Oil in the form of kerosene was used mainly for lighting, having replaced the whale oil that had been used previously. Gas was piped into homes for even better illumination; it was supplanted eventually by electric lighting.

With the invention of the Bessemer process for making steel cheaply, the *steel age* arrived. Marked advancements in the development of the steel industry have been the products of the *science* of *metallurgy*. Then developed the production of metals lighter than steel, such as aluminum, which have been used by companies making hospital equipment.

A "horseless carriage" was constructed in 1880 according to the plans of Gottlieb Daimler. Henry Ford was one of the pioneers in the automobile industry and encouraged the assembly line production that resulted in the greater availability of automobiles.

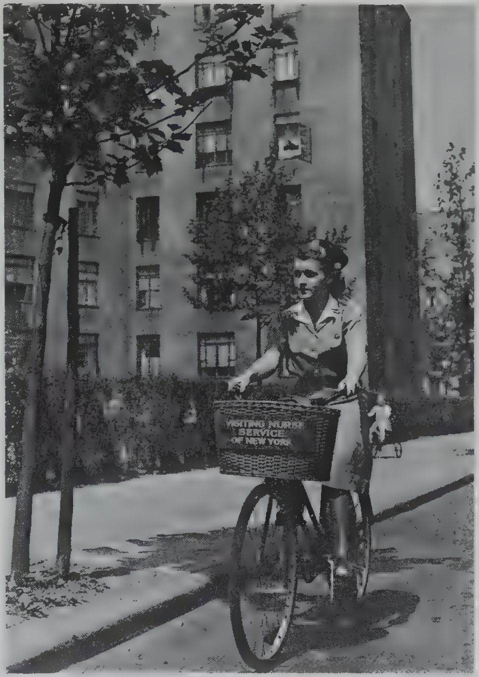
VISITING NURSE SERVICE OF NEW YORK

Figure 250. In 1944 during the gasoline shortage of World War II, nurses rode bicycles in the Bronx and Queens in New York. (Courtesy of the Visiting Nurse Service of New York.)

The *automobile* has been responsible for many occupational opportunities as well as bringing medical assistance to a patient much more quickly than ever before. Car accessories, gas stations, tourist facilities, construction of roads, motor busses—all have changed American life. Travel opportunities widened the vista of knowledge, provided recreational opportunities, encouraged contact with new diseases, and increased the accident rate.

The *Diesel engine* was invented in 1897 and produced another need for oil. This type of engine on the railroads replaced the coal-stoked steam engine but was cleaner and more efficient. Travel by rail was provided with greater speed, safety and comfort than ever before.

In 1903 at Kitty Hawk, North Carolina, the *Wright brothers* attempted their first flight in a gasoline engine airplane. It is hard to realize that the Roman Army, still later the Crusaders, and later still Paul Revere depended on horses to cover distances in a minimum amount of time. Centuries had elapsed with no appreciable evidence of improvement in transportation. In 1904 military planes were penalized whenever they flew slower than 40 miles per hour. Charles Lindbergh astonished the world by flying alone on his transatlantic flight from New York to Paris, a distance of 3160 miles. Round the world flights were made by Wiley Post and Harold Gatty (1931) in 8 days, 15 hours, and 51 minutes. (It is recalled that a woman, Amelia Earhart Putnam, made a transatlantic solo flight in 1932.)

By 1945, planes had exceeded the speed of sound, breaking the supersonic barrier. In February 1962, the astronaut, John Glenn, travelled 83,450 miles in 4 hours and 55 minutes! Commercial air service for mail and passengers started in the thirties. Air transportation routes penetrated nearly all parts of the globe.

Helicopters have proved of immeasurable value because of their high degree of maneuverability. Many patients are flown great distances and reach medical centers more quickly. Members of the United States Public Health Service broadcast medical advice over the radio, and patients are flown over roadless territory to the hospital for care in parts of Alaska by helicopter.

Another practical use of the helicopter as a miniature hospital that flies through the air has been tried out in West Germany. The name for this unique vehicle is the Clinocopter. Its purpose is to go to the scene of traffic accidents to save lives that might otherwise be lost because of improper care and delay in ambulances' reaching the patient. A professional team, namely a surgeon, assistant, and nurse, accompanies the Clinocopter. The necessary equipment needed for emergency surgery, down to a complete x-ray unit, has been installed.

Many benefits have resulted from progress in the air. Yet certain problems, such as airsickness from high altitude flying and accidents, have been encountered. Teams of research workers from specialized fields, such as engineers, physiologists, biochemists, and physicists, have pooled their knowledge in expanding the field of aviation. Members of the medical profession who are interested and prepared have

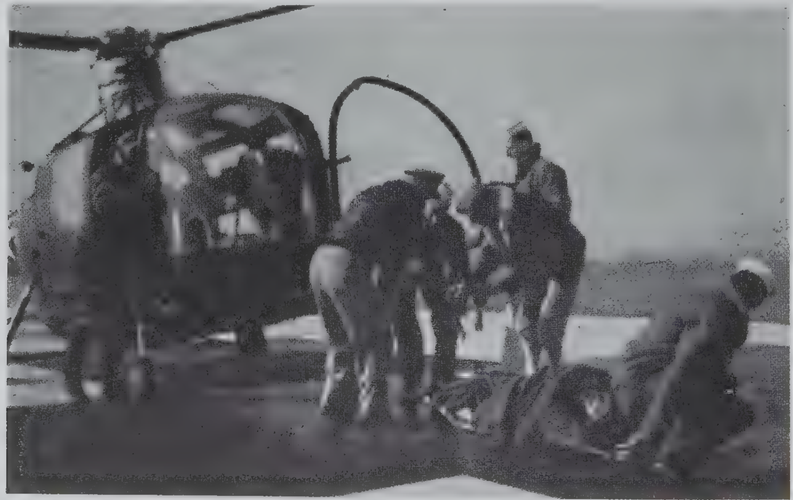

Figure 251. A helicopter awaiting a patient.

emphasized the role of the medically prepared person in the field of *space medicine.*

Submarines were used during both world wars. Newer, much more powerful, and infinitely more destructive ones have been invented with the nuclear-powered Polaris submarines.

In the area of *communications,* use of the *telephone* has become widespread, while motion pictures, radio, and television all were invented in the twentieth century. *Alexander Graham Bell* had sent human voices over wires in 1876; improvements were made by him, Edison, and others; *Marconi* channelled wireless telegraphy for world use by sending wireless signals across the Atlantic in 1901. This was followed by human voices sent over the air and, finally, in 1920 the *first radio station,* Station KDKA, in Pittsburgh became a full-fledged broadcasting station. Radio waves carried voices, still pictures, and motion pictures, and finally *television* appealed to the ear and the eye.

The benefits of television in the educational as well as recreational field have been realized through the use of closed circuit television.

The field of *electronics* produced radio, television and radar. *Radar* has been invaluable in the detection of distant objects; it makes travel in the air and on the sea much safer.

In July, 1962, *Telstar* was launched. By it scientists demonstrated the transmission of international television as well as voice messages, telephone conversations and television from continent to continent by way of a satellite orbiting the earth. The effects of this form of communication could be far-reaching. Telstar as a system of international communication can provide much in the way of recreation and education in art, music and drama that formerly only wealthy people could afford. It offers an excellent medium for health teaching and instructional programs of medical significance as well as the obvious and important news coverage.

ADVANCES IN BIOLOGICAL AND PHYSICAL SCIENCES

During the twentieth century many new offshoots branched from the main stem of biological and physical sciences, and there occurred a marked expansion in older, better established ones.

Much has been learned about the field of *astronomy* by using the telescope as a giant camera for photographing the heavens. The largest reflecting telescope is located in the Mt. Palomar Observatory in California.

The science of *bacteriology* has increased in scope and depth. Aseptic technique permits instruments, dressings and the surgical field to be free from bacterial contamination when correct methods of sterilization have been employed. The *electron microscope* has made it possible to study *viruses* and many causative organisms in greater detail than had been possible prior to its invention. Many valuable vaccines have been developed in this century. Many associated sciences, such as *parasitology,* have evolved. An examination of the structure of the cell has become as important to the biologist as the atom has to the physicist and chemist.

Thus the study of *cellular biology* and *cytology* developed. The scientific bases of *pathology* in studying diseased tissues have aided in more accurate diagnostic tests and research for more efficient ways of treating patients.

Chemistry has progressed from the days of its predecessor alchemy. The dream of

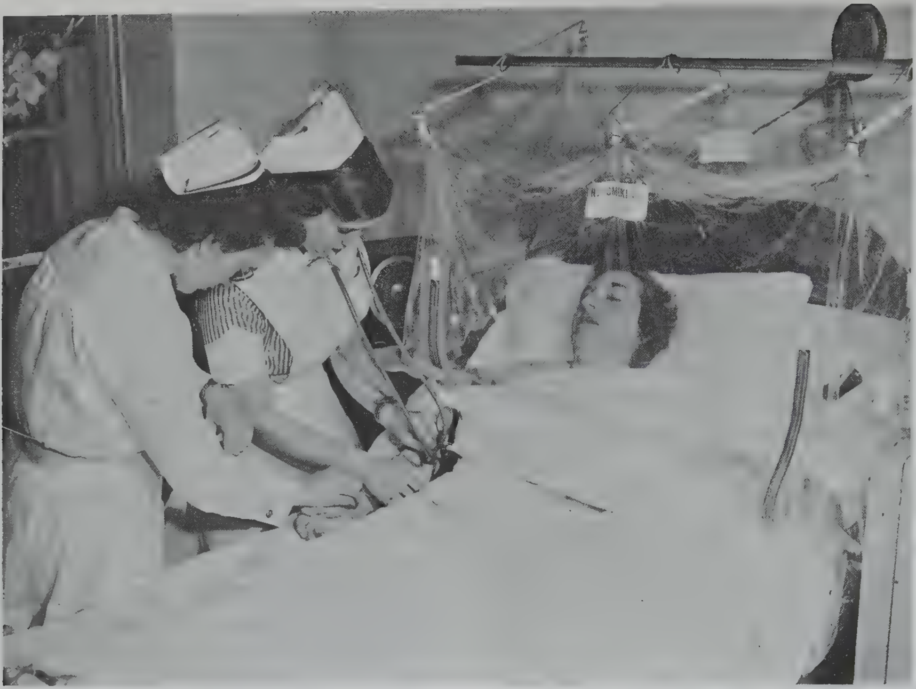

Figure 252. Supervisor demonstrating use of oxygen therapy to student nurse, Georgetown University Hospital, Washington, D. C. (Courtesy of Public Health Service, U. S. Department of Health, Education and Welfare.)

alchemists to find a way of changing one element into another has been realized in this century. *Democritus* (ca. 450 B.C.) believed that all matter was made of atoms or particles too small to be divided. In 1803, *John Dalton* stated that all forms of matter were composed of atoms which were indivisible.

Gradually, it came to be believed that all matter could be changed to solid, liquid or gaseous states by either removing or adding heat. In 1869, Mendeléef worked out the periodic table of known elements according to atomic weights. By 1897, Thomson had proposed that electrons formed part of every atom. This was followed by the experimentation of Mosely, Rutherford and Bohr which proved that atoms were composed of three types of particles: protons, electrons and neutrons. Their arrangement within the atom resembled a solar system. The protons and neutrons were located in the nucleus while around the nucleus the electrons whirled at a fantastic speed. Atoms having the same properties but different weights were called *isotopes.*

In 1918, Rutherford *smashed the atom.* By 1933, Fermi made an important discovery which revealed that the nucleus of the atom has the ability to attract neutrons, thereby becoming *radioactive.* The atoms of radium are in a constant state of disintegration, converting their mass into energy. *Albert Einstein* as early as 1905 revealed the concept that mass could be changed into energy and energy into mass.

When atoms were split or smashed by artificial means, the *atomic age* had been ushered in. The machine which carries out this function is called a "cyclotron." The splitting or "fission" of the nucleus of uranium sets free several neutrons. A chain reaction results in the release of enormous amounts of energy—thus was formed the basis for the atomic bomb. Since then more lethal weapons have been devised.

There are many useful purposes for atomic energy such as generating electric power and propelling aircraft, but the area of greatest interest is that which produces radioactive isotopes for medical research. *Radioactive isotopes* are elements which have become radioactive by being exposed to radiation. The amount of radiation is measured by an instrument called a "counter" such as a *Geiger counter.* In medical experimentation bacteria are "tagged" with a radioactive element such as phosphorus or iodine in an attempt to detect how the bacteria bring about disease in the human body. The action of a drug may be traced within the body in a similar manner. There are technical atomic energy research centers as Oak Ridge, Tennessee as well as *medical atomic energy research* centers such as the one at *Brookhaven* on Long Island.

Chemical progress has benefited society in many ways as in the pharmaceutical industry, in the field of foods and nutrition as well as in the cosmetic field. *Dr. George Washington Carver* (*ca.* 1864–1943) employed his theories in "chemical gymnastics." An example is his changing the peanut into a multiplicity of useful preparations.

Biochemists have added much to our knowledge of the chemistry of digestion; studies in *nutrition* have advanced the knowledge of this subject in this century.

Vitamins, those necessary ingredients discovered in small amounts in certain foods, have been synthesized chemically so that vitamin deficiency diseases are now being eliminated from the roster of illnesses.

Many drugs are synthesized in the chemical laboratories and chemotherapy

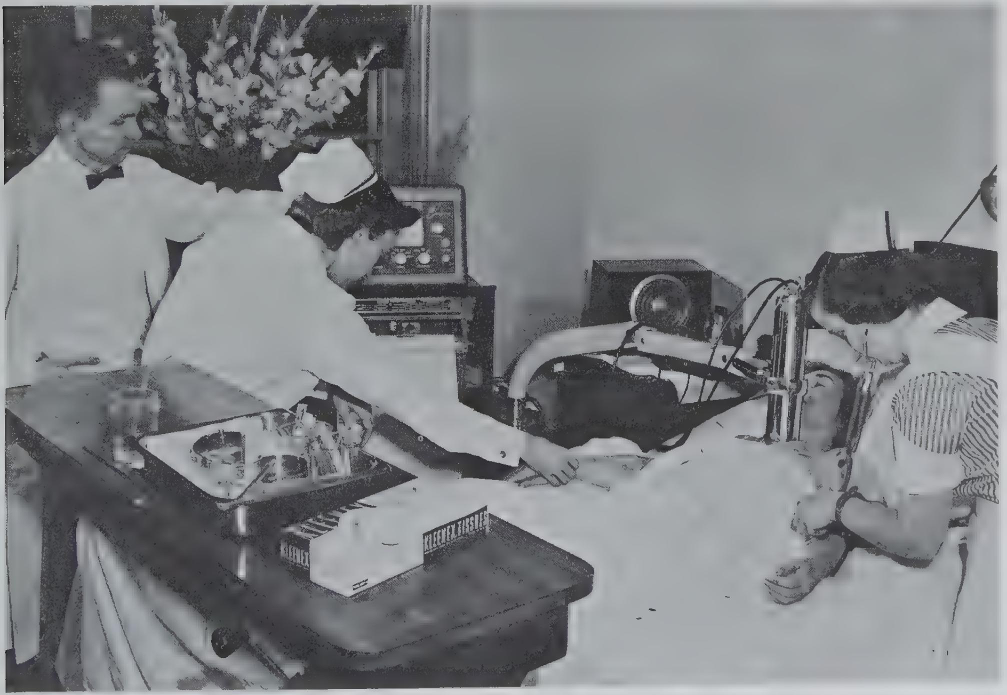

Figure 253. Doctor, nurse, and student nurse making blood volume study with radioactive isotopes, Georgetown University Hospital, Washington, D. C. (Courtesy of Public Health Service, U. S. Department of Health, Education and Welfare.)

has become one of the major aspects of patient care. In 1936 sulfanilamide, the first of the many sulfa miracle drugs, was available for the treatment of bacterial infections. *Dr. Alexander Fleming* of St. Mary's Hospital in London was responsible for providing the medical profession with an important contribution, that of *penicillin.* Hormonal therapy has been a boon to twentieth-century patients needing this type of treatment.

Tuberculosis had been a dreaded disease during the nineteenth century. But because of the efforts of many people during that century it was much better understood. The work of *Laennec* provided an instrument for listening to the chest; the combined efforts of many had stressed that the disease was contagious; *Robert Koch* had detected the causative organism; *Wilhelm Roentgen* had discovered a method of detecting evidence of tuberculosis in the body; and, due to the development of tests, bovine tuberculosis could be controlled in cattle.

Edward Livingston Trudeau (1848–1915) began the practice of sanatorium care for victims of tuberculosis. In pulmonary tuberculosis when once infected, the best chance of cure was rest which restricted the movement of the infected lung. A sanatorium seemed to be the best place for a cure as well as prevention of the spread of disease.

Surgery has been attempted in the treatment of pulmonary tuberculosis in order to facilitate the rest cure for the afflicted lung. *Artificial pneumothorax* was one method by which air was injected under pressure through a hollow needle into the chest cavity. The lung was collapsed wholly or partially, permitting it to rest. *Thoracoplasty* was a surgical operation in which the ribs on the infected side were removed, allowing the chest wall to cave in completely, thus preventing the infected lung from functioning. Another technique for resting the lung was to crush the phrenic nerve which paralyzed the diaphragm.

By 1944, streptomycin was discovered by *Selman Waksman,* and thence chemotherapy entered the clinical field of therapy for the patient with tuberculosis. Several other drugs were found useful in combination with streptomycin.

Tuberculosis (all forms) was the second leading cause of death in 1900 causing 194.4 deaths per 100,000 in that year or 11.3 per cent of the total. By 1959 the death rate from this disease had fallen to 6.7 per 100,000; it was no longer in the top ten death-dealing diseases for it accounted for only 1 per cent of all deaths. It has been calculated that the death rate from tuberculosis has declined by 98 per cent.

New treatments have drastically reduced tuberculosis as a major health problem today.

There was a second industrial revolution in the twentieth century which brought new machinery and new methods into many agricultural as well as industrial areas. This was helpful from the viewpoint of work simplification but exceptional from the point of view of the better produce which reduced markedly the chance of transmission of disease. In the dairy industry, in addition to testing the cattle, farmers have introduced milking machines which milk the cows under sanitary conditions, thus eliminating milk handlers. The milk is sent under proper refrigeration to plants where it is pasteurized.

There has been a rapid growth of cities due to the increase of factories, mechanization of farming, and the advancement in methods of travel and transportation. Improvements have been made in purifying water supplies; in meat inspection laws; in sanitary garbage collection and disposal; in sewerage systems for the sanitary disposal of human excreta; in street cleaning departments; in housing laws; in the increasing numbers and health supervision of public parks and recreation centers; in industrial hygiene and safety measures; in atmospheric sanitation.

MECHANICAL REFRIGERATION

In 1851, Dr. John Gorrie was granted the first patent for a cool-air machine. In treating patients who had high fevers, Dr. Gorrie believed firmly that if the room temperature could be lowered, his treatments would have a greater degree of success for fever-stricken patients. In desperation, he relinquished his medical practice and devoted his full time to the problem of cooling air, and of freezing water artificially or ice-making. This achievement led to air conditioning. In 1914 his statue was placed in Statuary Hall of the Capitol at Washington, D. C., in recognition of his pioneering efforts.

Dr. Gorrie laid the foundation for the ultimate development of refrigeration which has been so essential in shipping and storing fruits, vegetables, meats, and dairy products. Cleaner, more healthful produce is available, permitting a more varied and balanced diet for more people.

IMPROVEMENTS IN HOSPITALS

There has not been a great over-all increase in the total number of hospitals since the turn of this century but rather in the size of hospitals because the available bed capacity has doubled. The total space of hospitals, which was once utilized only by patients' beds, is now shared with diag-

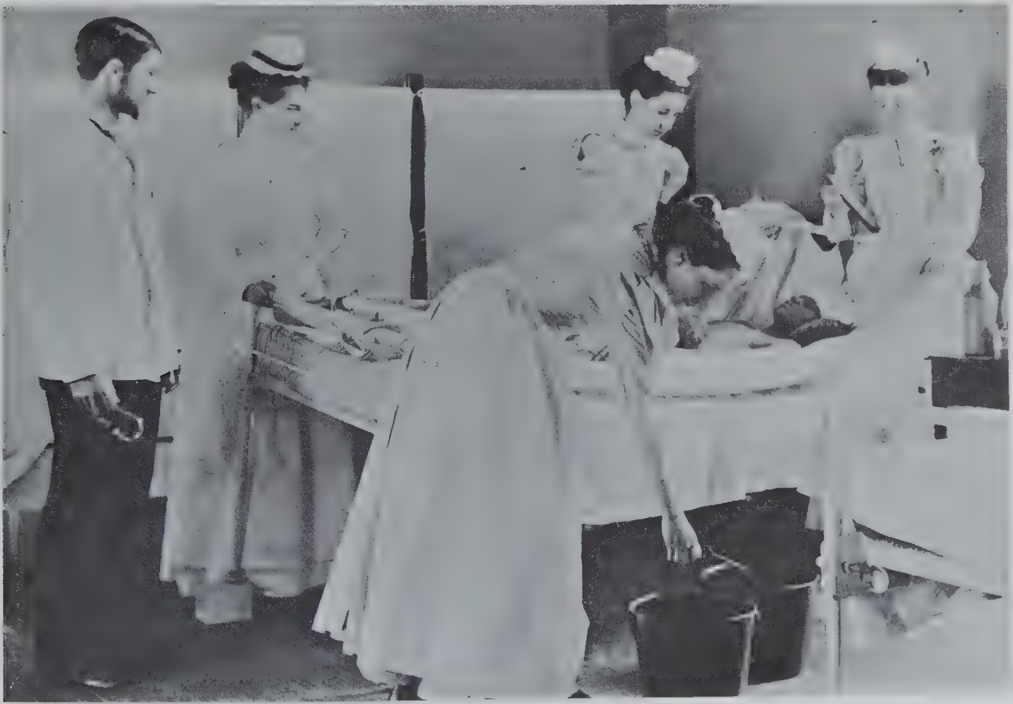

Figure 254. Three students of nursing prepare to give a patient who has typhoid fever a slush bath to reduce his temperature (1905). The foot of the bed has been elevated by shock blocks. (Courtesy of Hartford Hospital School of Nursing.)

nostic testing areas or therapeutic equipment needed for patient service.

The architecture of the newer buildings has been planned with greater understanding of the needs of the patient as well as those who care for him. Still greater progress in this area is needed. Many hospitals have a progressive plan for *intensive care* of a patient when he is critically ill, to a do-it-yourself plan where a minimal amount of care is required. The ancient custom of *"rooming-in"* with the sick loved one has been revived in some hospitals. In order to reduce expense, a motel system of patient care is another innovation in the medical setting.

Color is used more effectively in hospitals today than it has been in the last two centuries; the therapeutic value of music is beginning to be understood. Safety and sanitary aspects are noted as is the use of many modern inventions to make care easier for both patients and nurses. For instance, *invalifts* made of lightweight material transport a patient who is difficult to move from his bed. Formerly, this lifting had to be done by at least three nurses.

The construction of beds has been another area of marked change; the iron bed, which had to be lifted frequently by nurses to elevate the foot or head, has been replaced by electric beds that are raised or lowered by pushing a button. Certain variations of beds provide greater comfort and ease in assisting a patient or permitting him to do things for himself.

The feats of the physicists and engineers have been phenomenal. Applications of the theoretical principles behind many of their inventions are being applied to techniques and equipment used in the care of the sick.

PROGRESS IN MEDICAL SCIENCE

During the first decade there were many accomplishments. In 1901 *Landsteiner* de-

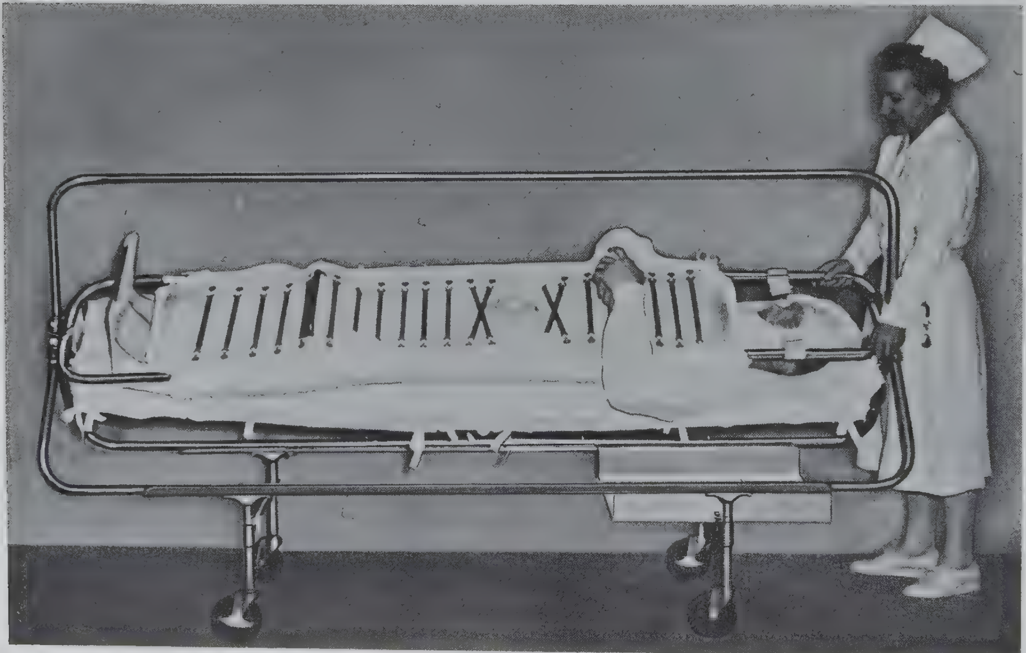

Figure 255. Care of a patient on a Stryker Frame (1946). (Courtesy of the Orthopedic Frame Company.)

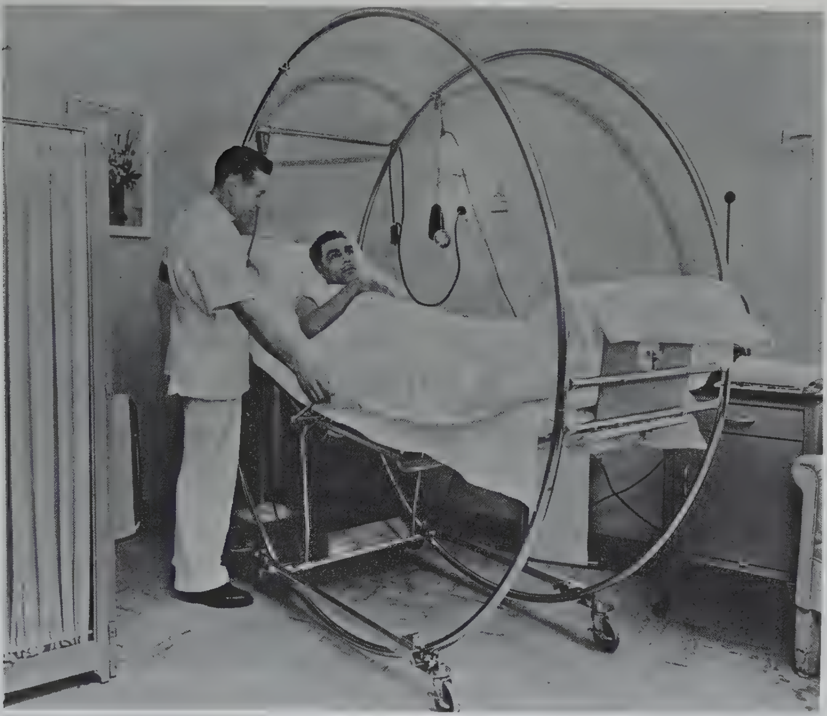

Figure 256. Care of a patient in a CircOlectric Bed (1960). (Courtesy of the Orthopedic Frame Company.)

scribed his phenomenal research with blood grouping which led to a knowledge of blood testing and made possible blood transfusions. Einthoven invented the string galvanometer, which provided the impetus needed to develop electrocardiography.

By 1905 the causative organism of syphilis was discovered by Schaudinn while Bordet and Gengon identified that of whooping cough. An understanding of the transmission of sleeping sickness as well as new staining methods for the study of tissues and bacteria were realized. The doctrine of allergy was established by *von Pirquet;* Wassermann introduced his well known test for syphilis; a skin test for tuberculosis was discovered; vaccines against typhoid fever became available; and *Paul Ehrlich* introduced his famous "606" or arsphenamine for the treatment of syphilis.

Between 1910 and 1920 *bacterial endocarditis* was described through the work of *Libman; Carrel's* famous work in tissue culture and transplantation was recognized as was *Cushing's* work on the pituitary gland. This was followed by identification of some of the vitamins; *Pavlov's* famous studies on conditioned reflexes; *Dr. Schick* announced his *Schick test* to determine the susceptibility to diphtheria in 1913; this was followed by immunization against diphtheria with toxoid. When World War I broke out, new techniques were necessary for the treatment of war wounds as were methods of coping with the problems of poison gases and gas gangrene. *Harvey Cushing* contributed his necessary and celebrated work on *surgery of the brain* during this period.

The values of prevention of diseases as well as curative aspects such as the use of cod liver oil in the treatment of rickets, and the benefit of ultraviolet rays were realized and utilized.

The years 1920 to 1930 saw continued progress. The year 1921 witnessed the announcement by *Drs. Banting and Best* of the isolation of *insulin* as the active ingredient in the pancreas needed for the metabolic activity of diabetic patients. *Endocrinology* became an important and recognized field. *Surgery of the chest* was another milestone in the progress of medicine. The work related to devising tests to determine susceptibility to *scarlet fever* as well as methods of prevention and treatment was undertaken by Drs. George and Gladys Dick.

The victims of an incurable disease, *pernicious anemia,* were aided by the research of Drs. Minot and Murphy in Boston who recommended that raw liver be included in the diet. Now pharmaceutical companies prepare liver for injection and another fatal illness has become one that can be controlled.

In the early 1930's industrial and occupational diseases received attention and correction. An *artificial respirator* called an "iron lung" was invented that was instrumental in keeping many patients alive especially those who were paralyzed by poliomyelitis.

The wonder drugs such as the *sulfa drugs —sulfanilamide, sulfapyridine* and *sulfathiazol* —were developed. These were beneficial in combatting such infections as those caused by streptococcus and staphylococcus. Methods of preserving the qualities of blood for therapeutic purposes were introduced. *Blood banks* were established for preserving human blood plasma and serum which were used in transfusions. *Shock therapy* was used in psychiatry; *corneal transplants* were successful, additional information in relation to the blood, such as the knowledge of the *Rh factor,* was forthcoming; and in 1939 Sir Alexander Fleming (1881–1955) discovered penicillin.

In the decade between 1940 and 1950, World War II and the Korean conflict presented to medicine many new problems which involved a knowledge of *atomic medicine* as well as war injuries and an expansion in the field of *tropical medicine.* In addi-

Figure 257. Dr. Jonas Salk.

tion to blood banks, many other banks, such as those for bone and tissue, became a reality. Powerful drugs such as atabrine (as a substitute for quinine), antihistamines for relieving allergic conditions, cortisone and ACTH, and of course the radioactive isotopes were processed. Supersonic and ultrasonic vibrations were used in medicine at this time.

In 1944 *Dr. Helen Taussig,* a pediatrician, carried out a research project on the plight of blue babies and emphasized the need for corrective surgery. This resulted in the now famous heart surgery which was achieved successfully by *Dr. Alfred Blalock* of Johns Hopkins.

Cancer detection tests such as the vaginal smear test by *Dr. Papanicolaou* became available by 1948. The field of rehabilitation received a new status due to the efforts of *Dr. Howard Rusk* whose philosophy and teaching have been a boon to mankind.

During the last years since 1950, *space medicine* has evolved as an offshoot of the growing field of astronautics. In 1955 *Dr. Jonas Salk* produced a vaccine for the prevention of poliomyelitis. Many surgical operations, such as *open-heart surgery* and *artificial tissue transplants,* have been carried out in this period. Unusual equipment, such as the *artificial heart* and *artificial kidney apparatus,* has been devised.

The remarkably unselfish and heroic efforts of many *medical missionaries* have been observed and history has recorded their valiant work. The contributions of *Dr. Albert Schweitzer and Dr. Tom Dooley* in their efforts as ambassadors of good will cannot go unnoticed.

The position of women in medicine has become more secure in this century. The personal physician of President John F. Kennedy was a woman; and it was a woman doctor in 1962 who received an award for blocking the marketing of the drug, thalidomide, by which action the

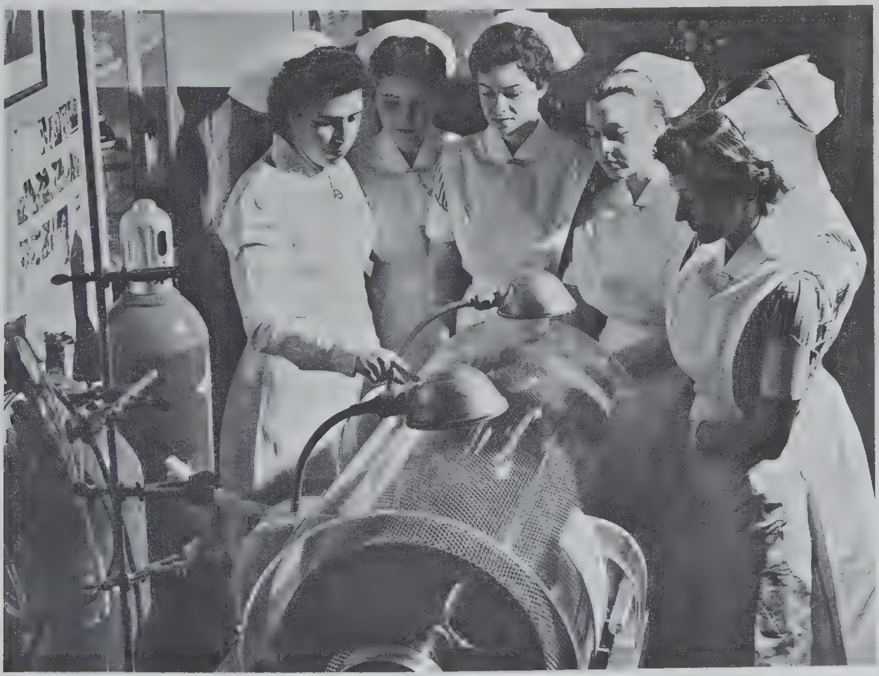

Figure 258. Clinical instructor explaining to student nurses the use of the artificial kidney, Georgetown University Hospital, Washington, D. C. (Courtesy of Public Health Service, U. S. Department of Health, Education and Welfare.)

tragedy of birth deformities were prevented in the United States. This woman medical officer, Dr. Frances O. Kelsey, of the Food and Drug Administration, received a gold medal and citation for "distinguished federal civilian service."

A famous woman doctor was *S. Josephine Baker* (1873–1945), who received her M.D. degree from the Medical College of the New York Infirmary for Women and Children in 1899. She served her internship at New England Hospital in Boston.

The growing field of *public health* interested Dr. Baker and she joined the New York City Department of Health. Soon she became Assistant Commissioner of Health and was engaged in an expanding program dedicated to the health and welfare of children. She was responsible for the creation of the New York City Bureau of Child Hygiene and directed this program.

When she first started her crusade in the interest of infant welfare, she blamed much of the high infant mortality from gastrointestinal diseases on the city milk supply. She believed that the raw milk sold in the local grocery stores was a "diluted germ culture." Her suggestion was the establishment of baby health stations where bottled pasteurized milk, sold more cheaply than the raw milk, was accompanied by educational material on child care. The taxpayers would not approve this plan but it won the financial support of a wealthy lady who maintained thirty of these baby stations. Their success prompted the adoption of the station plan by the municipal authorities.

Dr. Baker was instrumental in establishing the *United States Children's Bureau* in 1912. Her interest in growing professionally was evidenced when she became the first woman to earn the degree of Doctor of Public Health. Dr. Baker was also the first woman physician to be accepted for a position with the Federal Government.

Dr. Baker was a founder and one of the early presidents of the American Child Hygiene Association. All of her professional life was devoted to the service of providing for children, a healthier, happier world in which to grow.

WHITE HOUSE CONFERENCES ON CHILDREN AND YOUTH

There have been six White House Conferences; all have been devoted to the interests of children and youth.

1909—The First White House Conference was centered around the care of dependent children. As a result of this conference:

1912: Congress established the United States Children's Bureau
1915–1919: The Children's Bureau helped states create divisions of Maternal and Child Health. All of the activities of the Children's Bureau have been directed toward three worth-while objectives: "(1) to insure to the children of the nation the right to be born as normal healthy babies and to develop into vigorous young persons ready to take their places in the adult world; (2) the remedying of conditions in our society which are obstacles to normal child health and development, and (3) the prevention of these harmful conditions."

The Children's Bureau has been concerned with employed children. When the Bureau was established by Congress, there was specified in the Act the need for investigation of "dangerous occupations, accidents, and diseases of children; employment and legislation affecting children in the several states and territories."

1919—The Second White House Conference emphasized child welfare standards. Concern was expressed for the high maternal and infant death rates partially due to too rapid industrialization. Results of this conference included:

1928–1931: Committee on Cost of Medical Care was appointed.
1921: Sheppard-Towner Act (Maternal Child Act) passed.
1924: Child Labor Law amendment was proposed.

1930—The Third White House Conference stressed child health and protection. This conference resulted in:

1930: Children's Charter was enacted.
1935: Social Security Act was passed.
1935–1936: The National Health Survery was attempted.

1940—The Fourth White House Conference selected as the theme, "Children in a Democracy." Continued study on responsibility of Federal, State and Local government for maternity and child care was approved. Religion was emphasized. Grants-in-aid for research and for upgrading health professions were proposed.

Results of this conference were:

1942: Emergency Maternity and Infant Care Act was passed.
1946–47: Hill Burton Act (hospital construction) was adopted.
1948: The Nation's Health—A report to the President was prepared.

1950—The Fifth White House Conference accepted the challenge of a healthy personality. This was the first of many conferences which encouraged all disciplines to work together on the problems. Youth was also represented. Two big problems they discussed were delinquency and mental retardation.

1960—The Sixth White House Conference for Children and Youth, used the same techniques as in 1950 for multidiscipline conferences but there were 7000 attending and the results were not as easy to summarize. The "migrant minor," the American Indian problem, the physically handicapped, the illegitimate child and the Negro child were discussed. Results were:

1960: President asked Governors to set up physical fitness programs in each state.
A permanent White House Conference committee was established to improve implementation on local level of recommendations of the 1960 conference.

At the beginning of this century, the circumstances surrounding the transmission and continuance of such diseases as typhoid fever, cholera, summer diarrheas, and food poisoning were beginning to be studied. The control of milk-borne, water-borne, and food-borne diseases was claiming attention. Eventually adequate measures for obtaining sanitary water supplies and sewage disposal systems were put into practice.

The Federal Government attempted to control, inspect, and supervise the quality of foods as early as 1879. At that time, a bill had been submitted to Congress to prohibit the adulteration of substances to be used as food and drink. It was not until 1906 that President Theodore Roosevelt signed the bill which enforced the proposal to prohibit the manufacture and sale of adulterated and misbranded foods. This law was to be administered by the Department of Agriculture. In 1938, President Franklin D. Roosevelt signed a bill which created the *Federal Food, Drug, and Cosmetic Act.* This Food and Drug Administration was transferred from the Department of Agriculture by the Reorganization Act and was placed under the control of the Federal Security Agency with a Commissioner of Food and Drugs.

The *Public Health Service* had been established by an act of 1798 authorizing marine hospitals for the care of American merchant seamen. In 1902, Congress renamed the Marine Hospital Service the Public Health and Marine Hospital Service under the direction of a surgeon-general. By 1912 this title was changed to the *United States Public Health Service.* The duties of this branch of the Federal service rapidly became more complex. In 1917 it established the National Leprosarium in Carville, Louisiana. It was responsible for the examination of aliens coming to the United States and the expansion of rural health services. In 1918 it added the Divi-

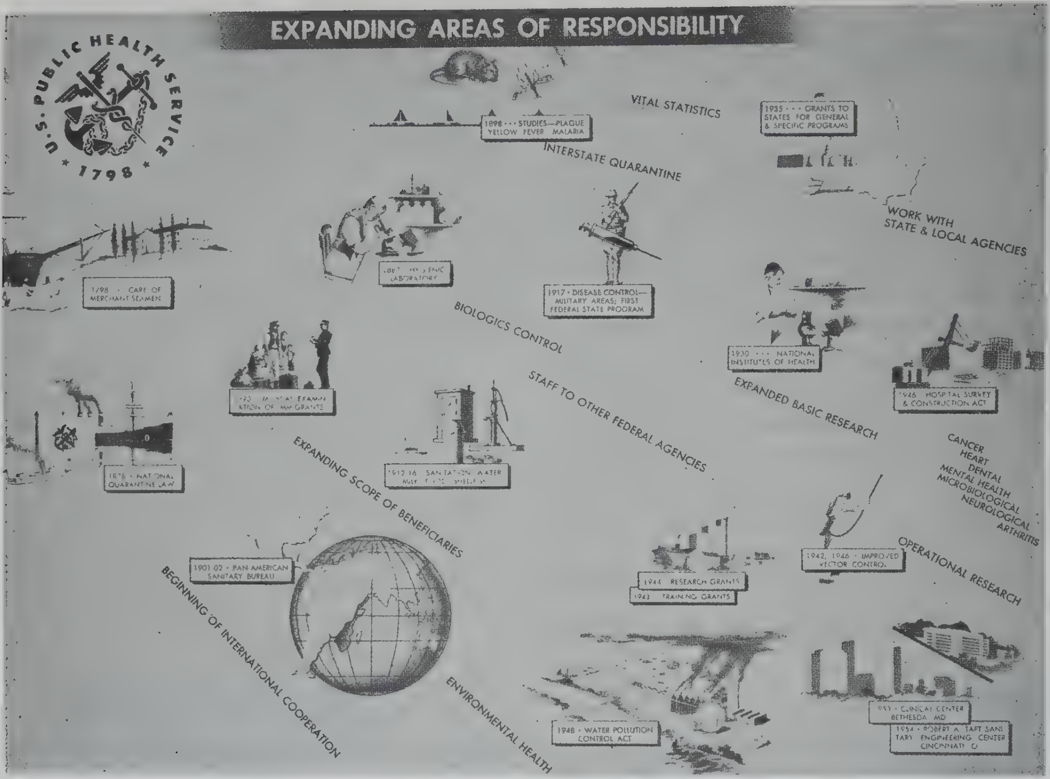
EXPANDING AREAS OF RESPONSIBILITY
U.S. PUBLIC HEALTH SERVICE 1798
1798 · CARE OF MERCHANT SEAMEN
1887 · HYGIENIC LABORATORY
1898 · · · STUDIES—PLAGUE YELLOW FEVER MALARIA
VITAL STATISTICS
1935 · · · GRANTS TO STATES FOR GENERAL & SPECIFIC PROGRAMS
INTERSTATE QUARANTINE
WORK WITH STATE & LOCAL AGENCIES
1917 · DISEASE CONTROL—MILITARY AREAS; FIRST FEDERAL STATE PROGRAM
1930 · · · NATIONAL INSTITUTES OF HEALTH
1946 · HOSPITAL SURVEY & CONSTRUCTION ACT
BIOLOGICS CONTROL
MEDICAL EXAMINATION OF IMMIGRANTS
1878 · NATIONAL QUARANTINE LAW
STAFF TO OTHER FEDERAL AGENCIES
EXPANDED BASIC RESEARCH
1912-16 · SANITATION WATER
EXPANDING SCOPE OF BENEFICIARIES
CANCER
HEART
DENTAL
MENTAL HEALTH
MICROBIOLOGICAL
NEUROLOGICAL
ARTHRITIS
1901-02 · PAN-AMERICAN SANITARY BUREAU
1944 · RESEARCH GRANTS
1943 · TRAINING GRANTS
1942, 1946 · IMPROVED VECTOR CONTROL
OPERATIONAL RESEARCH
BEGINNING OF INTERNATIONAL COOPERATION
ENVIRONMENTAL HEALTH
1948 · WATER POLLUTION CONTROL ACT
1953 · CLINICAL CENTER BETHESDA, MD
1954 · ROBERT A. TAFT SANITARY ENGINEERING CENTER CINCINNATI, O

Figure 259. Expanding areas of responsibility of the U. S. Public Health Service.

sion of Venereal Diseases, and in 1929 a narcotics division, which was renamed the Division of Mental Hygiene. It was responsible for hospital facilities at Lexington, Kentucky, and Fort Worth, Texas, for the care and treatment of those addicted to narcotics. The passage of the Federal Social Security Act of 1935 had marked and important far reaching effects. The passage of the National Cancer Act of 1937 brought into existence the National Cancer Institute. Rapidly the responsibilities of the U.S.P.H. Service were increased. In 1946 the Hospital Survey and Construction (Hill Burton) Act and the National Mental Health Act were passed, and in 1948 the National Heart Institute was founded. The National Institute of Allergy and Infectious Diseases and the National Institute of Dental Research were formed by reorganizing several existing units. *The National Institutes of Health* were developed. Since 1950 the National Institutes of Arthritis and Metabolic Diseases as well as the National Institute of Neurological Diseases and Blindness have been added.

In 1952, the U.S.P.H.S. established, on the grounds of the National Institutes of Health in Bethesda, Maryland, a research hospital center of 500 beds called the *National Clinical Center.*

THE DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

In 1946, the Federal Security Agency was involved in further reorganization which included the transfer of the Children's Bureau from the Department of

Labor, the Food and Drug Administration from the Department of Agriculture, and the National Office of Vital Statistics from the Bureau of the Census of the Department of Commerce.

In 1953, the Federal Security Agency was changed by an act of Congress to the Department of Health, Education and Welfare. In addition to the administrative offices, the following have become an integral part of the Department of Health, Education and Welfare: the Public Health Service, the Office of Education, the Social Security Administration, the Food and Drug Administration, the Office of Vocational Rehabilitation, and St. Elizabeth's Hospital.

VOLUNTARY HEALTH AGENCIES

Many voluntary health agencies have exerted a tremendous influence on the preservation of health as well as prevention of disease through this century. Research efforts have been aided by their financial assistance. Some of the more well known ones are the National Tuberculosis Association, the American Cancer Society, the American Heart Association, the National Foundation for Infantile Paralysis, and the National Mental Health Association.

PUBLIC HEALTH EDUCATION

The University of Michigan awarded the first degree in public health in 1910. Two years later a program of study had been developed at the Massachusetts Institute of Technology. The University of Pennsylvania receives the credit for establishing the first school of public health. In 1941, the *Association of Schools of Public Health* was formed, whose Committee on Professional Education led to the development in 1946 of a system of accreditation of programs granting degrees in public health.

In 1949 the *American Board of Preventive Medicine and Public Health* was established. The sponsors of this new organization were the American Medical Association, the American Public Health Association, the Association of Schools of Public Health, the Canadian Public Health Association, and the Southern Medical Association. Carefully selected field residency programs have been developed in order to improve the educational backgrounds of those whose duty it is to protect and preserve the health of the public.

WORLD HEALTH ORGANIZATION

International health work has been carried on for many years. As early as 1902, the Pan-American Sanitary Bureau was established; by 1907 the International Office of Public Health came into being; and by 1921 the Health Organization of the League of Nations was developed. In 1923, a consolidation occurred with the International Office of Public Health being absorbed into the Health Organization of the League of Nations.

In 1946, a constitution for a *World Health Organization* was accepted by sixty-one nations. The duties of the Health Organization of the League of Nations and the United Nations Relief and Rehabilitation Administration (UNRRA) were absorbed by this new World Health Organization. The Pan-American Sanitary Bureau became the regional headquarters for W.H.O. for the Americas while the international headquarters are in Geneva, Switzerland. The main objective has been to assist all peoples in the attainment of the highest possible level of health.

The World Health Organization as a specialized agency of the United Nations has been the world's directing and coordinating authority in international public health. It acts as an educational channel whereby health workers may receive the latest scientific and medical information and get assistance in applying this knowledge to their own countries.

Just as the children of the United States have the United States Children's Bureau so the children of the world have an agency specially dedicated to their interest and needs, the *United Nations Children's Fund.* Large sums of money have been spent on food, clothing, and medicines for victims of catastrophic emergencies as well as for children of underdeveloped countries. Programs for the eradication of specific diseases have been instituted.

PSYCHIATRY

The fields of psychiatry and psychology have gained momentum and flourished in the twentieth century. The concept that mental illness can be cured, especially when the person has been given personalized care and correct treatment, was stressed by the indefatigable efforts of *Clifford W. Beers* (1876–1943).

Mr. Beers when a young graduate of Yale attempted to commit suicide by jumping from the fourth story window of his home. He was rescued; though seriously injured, he was alive. He was incarcerated for three years in various institutions for the mentally ill. His treatment vacillated between indifference and cruelty. At one period, he was kept in a strait jacket for twenty-one consecutive days and nights. It was his firm determination to devote his energies to the improvement of the care of the mentally ill. His chance came after he was discharged in 1903, cured only by the processes of nature.

In 1908, Clifford Beers published his epoch-making book, *A Mind that Found Itself.* This book was a frank, disarming picture of his illness, the way he was treated, and the unbelievable sufferings to which he was subjected. In 1908 in his native state of Connecticut, he founded a *Society of Mental Hygiene* whose purposes were "to work for the conservation of mental health; to help prevent nervous and mental disorders, and mental defects; and to help raise the standards of care for those suffering from any of these disorders."

In 1909, a *National Committee of Mental Hygiene* was established through his efforts and with essentially the same purposes. In 1930, in Washington, D. C., the representatives of fifty-three nations joined in establishing the *International Committee for Mental Hygiene.*

The prevention, early detection and acceptance of prompt psychiatric care has been advocated. The public has a greater acceptance of this illness as one of the illnesses of the body rather than as an isolated punitive illness of which one is ashamed.

CHANGE IN MEDICAL EDUCATION

It has been recorded that the failure of the schools of medicine to keep abreast of scientific progress led to the establishment of *state medical boards* during the closing years of the nineteenth and early years of the twentieth century. These boards were empowered to examine all candidates and to license those who were successful in meeting the standards set by this Board of Examiners in Medicine. For some years they were hampered by lack of financial backing and by too many political controls.

In 1904 The American Medical Association established a *Council on Medical Education* to investigate the problems of medical education that had been identified as lack of educational standards, lack of prepared faculty, and meager resources.

Carnegie Foundation was asked to make a survey of medical education. This foundation was eminently qualified to do this because it had completed studies in law and theology and was prepared to study medicine as well. A forceful scholar, *Abraham Flexner,* undertook the survey. His report, often referred to as "The Flexner Report," was published in 1910 in the book, *Medical Education in the United States and Canada.*

This study revolutionized the total field of medical education. Some of the results were that many of the weaker schools closed, many schools gained in strength through university affiliation, and nearly all schools were able to either secure financial backing through private endowment or state support. The admission requirements for medical schools changed and were enforced for all candidates for the profession of medicine. By 1914, high school graduation was required; by 1916 this changed to a requirement of one year of college; and by 1918 to two years of college. The necessary base of broad liberal education was becoming essential before the professional superstructure of medicine was added.

The "Flexner Report" emphasized the need for fulltime faculty. They should be experienced teachers skilled in a medical specialty. Formerly, practicing physicians devoted their free time to their teaching responsibilities, and thus medical students frequently received relatively little clinical instruction.

The changes that were instituted due to the Flexner Report were remarkable. The devastating criticism provoked an immediate revolution in medical education. The proprietary diploma schools of medicine disappeared and university medical schools were established. The apprentice gave way to the university student of medical science. The faculty became university professors whose time was devoted entirely to instruction and research.

In 1962 medical educators have been carrying out some self evaluation and the trend seems to be a shortening of the total program with greater emphasis on humanities.

The span of life has been increased as a result of research in medical science, public health and sanitation, improvements in the living conditions of the less fortunate, and the elimination of contagious and infectious diseases.

XIII

The Twentieth Century (Continued)

DEVELOPMENTS IN NURSING AND SOCIAL SCIENCES

Against a background of progress in the areas of general historical, medical, biological, and physical sciences are viewed achievements in nursing and allied social sciences.

Organizations for Nurses

During the nineteenth century, it was realized that in unity there was strength. This concept had been followed by industrial, social and political groups in forming unions, parties, and societies for workers. Members of other professional fields had associations for their members which brought individuals together for united action.

Group consciousness had permeated the professional boundaries of nursing resulting in the formation of official organizations. The first evidence had been the founding of the *Royal British Nurses' Association* in 1887 by *Mrs. Bedford Fenwick.* In America, the first signs of union appeared in the organization of alumnae associations. These groups fostered the idea of co-

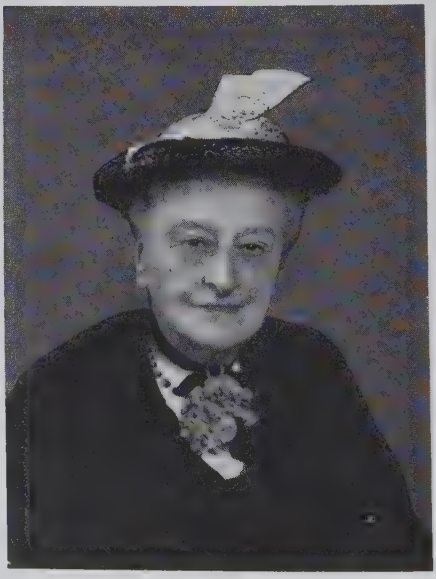

Figure 260. Mrs. Bedford Fenwick. In the Greco-Turkish war, 1897, she was in charge of a military hospital.

operation but centered it around the school and hospital of the alumnae groups. Later, opportunities of a broader scope were recognized.

The first general meeting of nurses in the United States was held at the Congress of Hospitals and Dispensaries at the World's Fair in Chicago in 1893. Mrs. Fenwick of England, Dr. John Billings of Chicago, and Isabel Hampton (Robb), the Principal of Johns Hopkins Training School, were its sponsors. Miss Hampton was appointed chairman. The outcome of this momentous conclave was the founding of the *American Society of Superintendents of Training Schools.*

By 1896 the alumnae associations had united to form the *Nurses Associated Alumnae of the United States and Canada.*

With the turn of this century, in 1900, an opportunity for the union of all nurses throughout the world became a possibility through the foundation of the *International Council of Nurses.* The I.C.N. is the *oldest international association of professional women.* It was founded in 1899 by an English lady, Mrs. Bedford Fenwick, assisted by nursing leaders from many countries. Its constitution was adopted in 1900. The first meeting of the Council was held in Buffalo, New York, in 1901. Active membership was offered to self-governing national nurses' associations, and nurses in every country were encouraged to form a nurses' association in order to apply for membership, to contribute to elevating and maintaining highest standards of nursing around the world as well as receiving the benefits which naturally come from such powerful joint efforts. Membership in the I.C.N. consists of national associations, rather than of individual members.

Since the I.C.N. was founded, quadrennial congresses have been planned at which the nurses of the world meet to discuss professional problems (see below).

The National Association of Colored Graduate Nurses was organized in 1908 because of a need to break down discriminatory practices facing Negro nurses as well as to foster leadership in the membership. It was dissolved by legal action of the members in 1951 after contributing many sound policies for the total profession of nursing as well as many leaders whose achievements have been exemplary.

At the Biennial Convention of the American Nurses' Association in Detroit in 1962, it was reported that integration has been achieved in every state in the Union so that qualified members may join their state nurses association without dis-

Year	*Place*	*Elected President*
1901	Buffalo, N.Y. U.S.A.	Mrs. Bedford Fenwick, Great Britain
1904	Berlin, Germany	Mrs. Bedford Fenwick, Great Britain
1909	London, England	Sister Agnes Karll, Germany
1912	Cologne, Germany	Miss Annie W. Goodrich, U.S.A.
1915	San Francisco, U.S.A.	Mrs. Henry Tcherning, Denmark
1922	Copenhagen, Denmark	Baroness Mannerheim, Finland
1925	Helsingfors, Finland	Miss Nina Gage, China
1927	Geneva, Switzerland	No election
1929	Montreal, Canada	Mlle. Chaptal, France
1933	Paris, France Brussels, Belgium	Dame Alicia Lloyd Still, Great Britain
1937	London, England	Miss Effie Taylor, U.S.A.
1947	Atlantic City, U.S.A.	Miss Gerda Hojer, Sweden
1949	Stockholm, Sweden	No election
1953	Petropolis, Brazil	Mlle. Marie Bihet, Belgium
1957	Rome, Italy	Miss Agnes Ohlson, U.S.A.
1961	Sidney, Australia	Mlle. Alice Clamageran, France

Figure 261. Sister Agnes Karll. (Courtesy of Lakeside Publishing Co.)

Figure 262. Baroness Mannerheim. (Courtesy of *The Trained Nurse and Hospital Review.*)

crimination due to race, creed or national background.

The *Canadian Nurses' Association* which was founded in 1908 was in reality a consolidation of the Canadian Society of Superintendents of Training Schools for Nurses established in 1907 and the Canadian National Association for Trained Nurses formed in 1908. The present name was adopted in 1924. The C.N.A. has been the official organization of registered nurses of Canada. There is but one strong national association of professional nurses representing all aspects of professional nursing in Canada. The C.N.A. holds membership in the I.C.N.

The *American Nurses' Association* was established in 1911 as a successor of the Nurses Associated Alumnae of the United States and Canada. It is the professional organization for registered nurses in the United States. The A.N.A. is a member of the I.C.N. By 1901, the first state nurses' associations were organized in order to work towards state laws to control nursing practice. State nurses' associations of all states are constituent units of the A.N.A. As early as 1906 the Connecticut State Nurses' Association had sent protests to magazines which advertised correspondence schools of nursing; it was reported that many dropped these advertisements. This is an example of the early activity of the state associations in more than local projects.

The A.N.A. is the *largest professional woman's organization in the world.* Its seal has the figure of Linda Richards. The over-all purposes of the association are to foster high standards of nurse practice and to promote the welfare of nurses so that all people may have better nursing care. It represents professional nurses and serves as their spokesman with allied professional and governmental groups and with the public.[1]

The American Nurses' Foundation, Inc., was

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[1] *Facts about Nursing,* New York, American Nurses' Association, 1957, p. 208.

Figure 263. Mlle. Bihet and Miss Ohlson, former presidents of the International Council of Nurses. (Courtesy of *American Journal of Nursing.*)

Figure 264. The International Council of Nurses' Presidential Badge of Office, presented by the nursing journals of the world.

established by the American Nurses' Association in 1955 to support research and studies in nursing and to sponsor special projects. This Foundation serves as a center for the planning, guidance and coordination of nursing research and for the dissemination of research findings in the public interest.[2] National headquarters was established in 1920 in New York City. All national nursing organizations are now located in the same building.[3]

The National League of Nursing Education was founded in 1912 as a successor to the American Society of Superintendents of Training Schools (1893). In 1932 the A.N.A. and N.L.N.E. voted to make the N.L.N.E. the Department of Education of the A.N.A.

The *National Organization for Public Health Nursing* was formed in 1912. The official journal was called *Public Health Nursing.*

The *Association of Collegiate Schools of Nursing* was established in 1933 with the purpose of fostering nursing education on a professional and collegiate level, strengthening relationships with institutions of higher learning and encouraging research. This organization was a constituent number of the American Council on Education.

By 1952 the National League for Nursing (N.L.N.) was formed due to the fusion of the following organizations: National League of Nursing Education (founded 1893), National Organization for Public Health Nursing (1912), Association of Collegiate Schools of Nursing (1933), Joint Committee on Practical Nurses and Auxiliary Workers in Nursing Services (1945), Joint Committee on Careers in Nursing (1948), National Committee for the Improvement of Nursing Services (1949), and National Nursing Accrediting Service (1949).

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[2] *Ibid.,* p. 210.

[3] 10 Columbus Circle, New York City.

The N.L.N. has four departments within two divisions. The Departments of Hospital Nursing and Public Health Nursing are in the Division of Nursing Services; the Department of Diploma and Associate Degree Programs and the Department of Baccalaureate and Higher Degree Programs are in the Division of Nursing Education.[4]

The *American Association of Industrial Nurses,* organized in 1942, has a membership of registered nurses employed in industry.

Eventually nurses felt the need to band together for the promotion of the spiritual aspects of nursing. The first of these was the *Guild of St. Barnabas for Nurses* which was founded in England. Though now nondenominational, the American Society was organized in 1886 in Boston under the sponsorship of the Episcopal Church.

The *International Catholic Guild for Nurses* was formed in 1923 and the *National Council of Catholic Nurses* was established in 1940. The promotion of the spiritual growth of Catholic nurses was the prime purpose for these organizations. An official magazine, *The Catholic Nurse,* has been published quarterly by this latter association which has chapters in every diocese.

The *Lutheran Nurses' Guild* was formed to foster the spiritual growth of nurses. The *Lutheran Nurse* has been published to serve as a motivating force for the members of this association.

The *National Nurses' Christian Fellowship* is another organization which aims to encourage Christian faith in daily living. A magazine, "His," has been published by this group, as has the bimonthly N.C.F. bulletin, *The Nurse's Lamp.*

JOURNALS FOR NURSES

In America there was need for a professional magazine to establish a means of communication between scattered groups of nurses. As early as 1896 Mrs. Robb suggested that the national association should have its own official magazine. In 1900 a stock company of nurses was organized for this purpose, and $2400 was contributed by hundreds of nurses to start the *American Journal of Nursing. Sophia Palmer,*[5] of Rochester, N. Y., and M. E. P. Davis, of Philadelphia, both in active hospital work, made themselves personally and legally responsible for the venture. Miss Palmer

Figure 265. Sophia Palmer, founder of the *American Journal of Nursing.* (Portrait by Morrall, Rochester, N. Y.)

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[4] *Facts About Nursing.* New York, American Nurses' Association, 1957, pp. 210–211.

[5] Miss Palmer began her training in 1876 under Linda Richards at Massachusetts General Hospital. She organized schools at St. Luke's in New Bedford and at Garfield Memorial, Washington, D. C., and reorganized the school at Rochester (N. Y.) City Hospital. She helped to organize both national nursing associations, was president of the first nurses' examining board of New York, founded the *American Journal of Nursing* and was its editor for twenty years. She died in 1920.

Figure 266. Mary M. Roberts, R.N., Editor, *American Journal of Nursing*, 1920 to 1949.

became the editor and remained in that position until 1920.

On October 1, 1900, the first issue of the *American Journal of Nursing* was published. Since 1912 the magazine has been the property of the A.N.A. and the official organ of the national nursing associations. *Mary M. Roberts* was editor from 1920 to 1949, when she retired after exerting remarkable influence on all fields of nursing. *Nell V. Beeby* (1896–1957) was appointed editor of the Journal in 1949. During her administration, the duties of this office broadened in scope to include two new Journal publications, *Nursing Research* (1952) and *Nursing Outlook* (1953). Becoming executive editor of the *American Journal of Nursing* Company as well as the editor of the *American Journal of Nursing,* Miss Beeby carried out her duties with wisdom and her death was a profound loss to the nursing profession.

Prior to the death of Miss Beeby in 1957, it had become apparent that aside from the editorial responsibilities of the professional magazines, the administration of the Journal Company was a heavy assignment. A new position of *executive director* was established, and *Pearl McIver* was appointed to this position in 1957. In 1959, when Miss McIver retired, she was succeeded by *Lucy D. Germain* who is the present executive director.

The sudden death of *Jeanette White* who replaced Miss Beeby was another loss. *Edith Patton Lewis* assumed the Journal's editorial functions until December of 1959, when *Barbara G. Schutt* became editor.

The Pacific Coast Journal of Nursing was established in 1904 and continued to 1944, when it was discontinued. Its editor for many years was Genevieve Cooke.

The Trained Nurse and Hospital Review (now the *Nursing World*) was established in 1888. It was the first nursing and hospital journal in this country of national circulation, and did valuable pioneer work. In 1889 it combined with the *Journal of Practical Nursing,* and later absorbed, one at a time, *The Nightingale, The Nurse, The Nursing World* and *The Nursing Record.* This was for ten years the only nursing and hospital journal of America and was the official organ of the national societies from 1896 to 1900.

LEGISLATION FOR REGISTRATION OF NURSES

It was essential that nursing organizations protect the public from unqualified nurses. Legislation was provided which demanded the legal approval of schools of nursing, faculty preparation and the curriculum, all of which were designed to prepare the graduate to fulfill her professional responsibility. Examinations were required of graduates by a specially appointed Examining Board which issued a certificate of licensure and granted the privilege of using the letters "R.N." to

THE · MARY · ADELAIDE · NUTTING · AWARD
NATIONAL LEAGUE FOR NURSING

Figure 267. Nell V. Beeby and the M. Adelaide Nutting Award which she received for outstanding leadership in nursing. (*American Journal of Nursing*, April, 1957.)

those candiates who passed the examinations successfully.

The first registration bill was passed in Cape Colony, South Africa in 1891. By 1903 the states of North Carolina, New Jersey, New York and Virginia had passed the first laws establishing a legal system of registration. In Canada the first registration bill was enacted by the Province of Nova Scotia in 1910.

Eventually every state in the United States and every province in Canada passed registration laws. Other countries became aware of the need for legal control of nursing practice and registration of duly qualified nurses, and took steps to fill the gap.

There were many problems inherent in interstate licensure and these have been lessened since the formation of the *Bureau of State Boards of Nurse Examiners* under the aegis of the American Nurses' Association. Since 1950 every state has used identical state board examinations, which provide one important aspect of uniformity. The tests originate from a test board pool which has been conducted by the Department of Measurement and Guidance of the National League for Nursing. By 1951 the members attending the state board conference recommended the adoption of a national minimum passing score for state board examinations. This has been another way of achieving uniformity.

THE ESTABLISHMENT OF MILITARY NURSING

At the close of the Spanish-American War, Dr. Anita McGee bent her efforts toward the building of the foundations for the Army Nurse Corps. It was through her efforts, with the support of the Nurses' Associated Alumnae (now the A.N.A.), that the Army Reorganization Bill was written, which, when passed by Congress in 1901, established the *Army Nurse Corps* as a branch of the Army Medical Service. Nurses received letters of appointment and agreed to serve three years but their functions and military status were not defined.

Dita H. Kinney, who became *Superintendent of the Corps* from 1901 to 1909 was a graduate of Massachusetts General Hospital. The second superintendent was *Jane A. Delano* (1909–1912) a graduate of Bellevue, where she had been superintendent of nurses. Her leadership ability was seen in many accomplishments; she organized the *American Red Cross Nursing Service* which included the Surgeons General of the Army and Navy in its membership. She resigned from the Army Nurse Corps to become the fulltime director (without salary) of the Department of Nursing of the American Red Cross.

The major accomplishment of this Committee on Nursing Service of the American Red Cross was to develop a system by which a membership of nurses could be relied upon to form a *reserve* both for military service as well as for emergency service with the American Red Cross. In order to join this reserve group it was essential to be members of the American Nurses' Association, the Army Nurse Corps as well as the American Red Cross Nursing Service. Members had to be graduates of schools well above the minimum standards set by the state boards of nurse examiners.

By 1908 the *Navy Nurse Corps* was authorized by the Navy Appropriations Act.

In May of 1908, the *Nurse Corps* of the *United States Navy* was established by act of Congress. *Esther Voorhees Hasson* was appointed first superintendent in August, and by October of that year the first twenty nurses had reported to the United States Naval Hospital, Washington, D. C. for orientation and duty. The Corps grew in number and the members were assigned to naval hospitals.

By 1910, certain members of the Navy Nurse Corps were given assignments to serve outside the United States. By 1911, those nurses who were stationed at Guam established a school of nursing for young native women in conjunction with the Navy's native hospital. The educational efforts of the members of the Navy Nurse Corps have been reflected in other schools of nursing they organized, such as the one on Samoa.

NURSING EDUCATION

Early strides in the development of nursing education were due to the constructive critical analysis of many people. A quick review of these comments reflect that in 1901 Dr. R. C. Cabot's article, "Suggestions for the Improvement of Training Schools for Nurses," in *The Boston Medical and Surgical Journal,* expressed dissatisfaction with the present system of training. In 1903 Dr. Francis Denny's report, "The Need of an Institution for the Education of Nurses Independent of the Hospitals," in *The Boston Medical and Surgical Journal;*

stressed the benefits that might accrue if some educational institution would give instruction to the nurse before she entered the hospital. Dr. Denny encouraged nurses to be educated for a profession. He stated that "the nurse's diploma should come from this educational institution, rather than from the hospital. Its award should represent good work in the preliminary course, together with satisfactory service in a hospital in which there was a high standard of nursing."[6]

A scrutiny of progress in nursing education during the first ten years reveals a change in terminology from "training" to "education," from "superintendent" to "director," from "probationer" or "probie" to "preliminary student," and then to "preclinical student," and from "training school" to "school of nursing." The first preliminary courses varied from a few classes to a planned program lasting six months. It included biological and social sciences and practical work on the mannequin frequently called Mrs. Chase. In 1903, arrangements were made with two technical schools—Drexel Institute in Philadelphia and Pratt Institute in Brooklyn—to offer a course of instruction covering one college year for students who wanted to enter a school of nursing. A student was to live at her own expense and pay her own tuition. This in a period when students of nursing were being paid a stipend to take the course in nursing. The stipend was for the continuous supply of service which the student provided for the hospital.

Another pioneering suggestion was presented by Isabel H. Robb; she advocated state-supported schools of nursing, but this did not materialize. The efforts of Mrs. Robb in initiating the movement for higher education for graduate nurses were brought to fruition at *Teachers College,* Columbia University. A one-year course in *hospital economics* was developed, and in *1907 Adelaide Nutting* became the *first professor of nursing in the world.* Her advisory committee was a group of eminent nurses. Under her inspiration the school had a remarkable development and became a powerful influence in the nursing world.

Figure 268. Isabel M. Stewart. (Photograph by G. Maillard Kesslere.)

When Miss Nutting retired in 1925, she was succeeded by *Isabel M. Stewart.* Both these women did outstanding work.

Miss Stewart, like Miss Nutting, was born in Canada and graduated from the Winnipeg General Hospital. She then attended Teachers College, Columbia University, after graduation becoming assistant to Miss Nutting, and in 1923 an associate professor. An authority on the history of nursing, her *Educational Status of Nursing* and *The Education of Nurses* have influenced the thinking of nursing leaders here and abroad for many years.

In 1909 *Dr. Richard O. Beard* presented a

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[6] Denny, Francis P.: "The need of an institution for the education of nurses independent of the hospitals." *Boston Medical and Surgical Journal,* June 18, 1903.

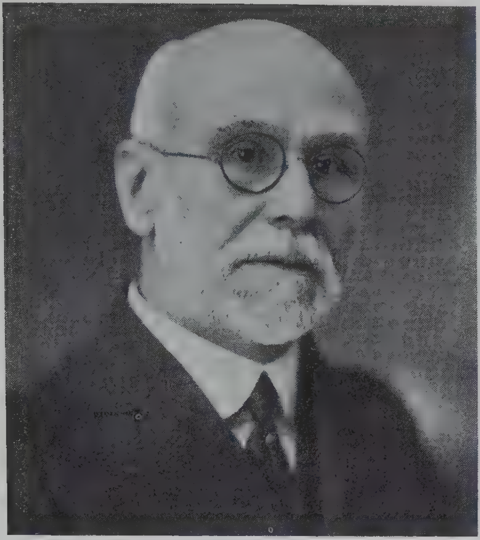

Figure 269. Dr. Richard O. Beard.

plan for a university school of nursing under the State University of Minnesota.[7]

All this is an example of the efforts of the pioneers whose vision and courage prompted a great experiment in nursing which made the school of nursing an integral part of a university program.

Lip service had been paid to the need for the preparation of nurses in the cultural setting used by other professions, but when Dr. Richard Beard urged the establishment of a university school of nursing, he rendered a monumental service to the profession of nursing.

Adelaide Nutting had been a catalytic agent in this movement because she encouraged[8] the separation of schools of nursing from hospital control and the provision of financial support for nurse education. She hoped that the importance of the profession of nursing would be recognized by universities.

Two other champions of the cause of nursing education were Drs. Washburn and Burlingham,[9] who advocated raising the whole standard of the nursing profession in the educational requirements for admission. They insisted that cultural values should be stressed.

In 1915 only ten schools reported full-time paid instructors; in most schools the superintendent of nurses did most of the teaching, while doctors attempted to teach anatomy and other sciences by lecture. Until about 1920 the "nursing arts" instructor did not exist; and for a long time her position and salary were lower than that of the "science" instructor.

Until state boards came into existence, each director of nursing made her own *curriculum.* Schools might plan and publish a program of classes and lectures, but there was often a question as to whether it was actually carried out.

In 1917 the National League of Nursing Education arranged a standard curriculum which included a little more than that of New York's. This curriculum was revised in 1927 and again in 1937.

Central schools were fairly common and successful in Europe. In them, preliminary students from several schools receive class instruction at one place, often at a university, under expert teachers. In this country they began (1900 to 1910) as affiliations between technical schools, colleges or other nursing schools.

Early in this century New York state established certain standards for accrediting its schools of nursing. Since most of the states had no registration laws and no boards of examiners at this time, it gradually became the custom for schools in other states to apply to New York for registration, thereby enabling them to prove that they were meeting the requirements of at least one group of nursing authorities.

More, perhaps, than any previous war,

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[7] Beard, Richard O.: "The university education of the nurse." *Teachers College Record, 11:*27–40, 1910.

[8] Nutting, M. A.: *Educational Status of Nursing.* United States Bureau of Education, Bulletin No. 7, 1912.

[9] Washburn, F. A., and Burlingham, L. H.: "The supply of pupil nurses and nursing standards." *The International Hospital Record,* January 1913.

World War I made both military authorities and the public conscious of their dependence on nurses.

An epidemic of pneumonia in 1917–1918 and a world-wide epidemic of influenza in 1918, in which medieval conditions were nearly duplicated, emphasized the need for nurses of quality.

WORLD WAR I

The period which followed was dominated by World War I which was to create a huge demand for nurses; to open up new fields of specialization; to accelerate the educational processes which were already under way; and to awaken in the public a consciousness of the importance of good nursing.

For the first time in history, an adequate number of carefully selected nurses were available for military service. The vision and foresight of Jane Delano of the American Red Cross Nursing Service was responsible for this reservoir of nurses.

In 1914 when *World War I* began, although no one thought that it would last more than a few months, the American Red Cross immediately sent units of doctors and nurses to help in six countries of Europe. When the United States came into the war in 1917, the Red Cross Nursing Service became the reserve of the Army and Navy.

Helen Scott Hay, of the Illinois Training School, Chicago, went overseas just before the World War, at the request of the Queen of Bulgaria, to establish trained nursing. She remained as chief nurse of the American Red Cross in the Balkans, and later (1921) was chief nurse of the American Red Cross in Europe.

As the war went on and country after country was drawn into it, with millions of men involved, the medical and nursing resources of the world were taxed to their utmost. Eventually, the personnel of civilian hospitals in every country were seriously depleted, and the sick civilian suffered from neglect.

The fighting was chiefly trench warfare, different from the modes used in previous wars. The wounded went in a continuous stream from first aid station or field hospital to evacuation hospital (ten miles back), and within twenty-four hours to base hospitals, still farther away. There were no women nurses at the front, either in first aid stations or field hospitals. France, England and the United States maintained separate hospitals; cooperation was always good. In addition to military hospitals, there were myriads of auxiliary hospitals in cities or distant villages, in the

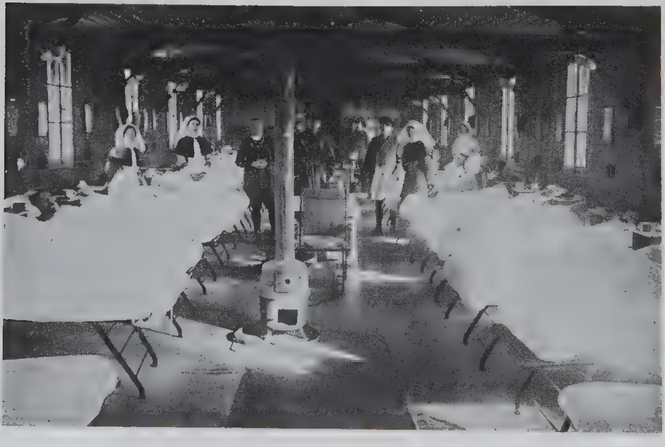

Figure 270. Hut Ward, St. John's Ambulance Association. (Courtesy of Miss Isabelle Abbott.)

castles, chateaux or homes of the wealthy, often supported by private funds. In these the staff was composed of women, trained and untrained, and of men too old or unfit for the army, who often worked at no salary.

The *American Ambulance* at Paris, a private unit, included some famous surgeons and served throughout the war. *Harvard University* had a medical unit with the British in France from June, 1915, which remained even after the war. Its second unit arrived after America entered the war.

Two catastrophic episodes of World War I stand out: (1) The epidemic of typhus in Serbia in 1915, involving half a million civilians, was a repetition of medieval days. The cause of typhus was not known, but was discovered during the epidemic by Scottish and American doctors. A unit of American nurses served through that terrible time. (2) In 1918, an epidemic of influenza became pandemic as it reached France, the United States and other parts of the world. Army and civilian hospitals, as their doctors and nurses dropped out with the infection, struggled with a dwindling staff until the plight of both servicemen and their families at home was pitiful.

Since trench warfare was the rule, most wounds were caused from shrapnel, a few from bombs and almost none from bullets. Wounds of the head and face were common. Poison gases were used for at least three years, and the men who survived them often never recovered from the effects. Mustard gas caused the greatest agony. The Carrel-Dakin method for infected wounds was developed. Since so many supply ships were torpedoed and there was always doubt about supplies arriving, American doctors and nurses learned to economize.

The *value of trained women* was demonstrated as in the days of Florence Nightingale. Graduate nurses, accustomed as they were to emergencies and to group work, stepped into war conditions and adjusted themselves unhesitatingly to a new environment. Great problems were involved in providing sanitation for armies constantly on the move, dealing with communicable diseases, caring for severely damaged tissue, and coping with the unusual results of "shell shock." In previous wars there had been well defined battles which demanded collecting and caring for the wounded and burial of the dead at the termination of the battle. In this war, the so-called battles lasted for days, the dead were buried as best they could be or not at all, while the wounded were rescued under fire. There was always a stream of wounded, sometimes swelling, sometimes thinning, but never ceasing.

The members of the Navy Nurse Corps were utilized during World War I. The first Navy nurses to be assigned for transport duty reported aboard the U.S.S. George Washington on which President Wilson sailed to France in 1918. The first Navy nurses to serve on board a hospital ship did so in 1920 aboard the U.S.S. Relief.

Figure 271. Annie W. Goodrich, 1866–1954. (Courtesy of Yale University Alumnae Association.)

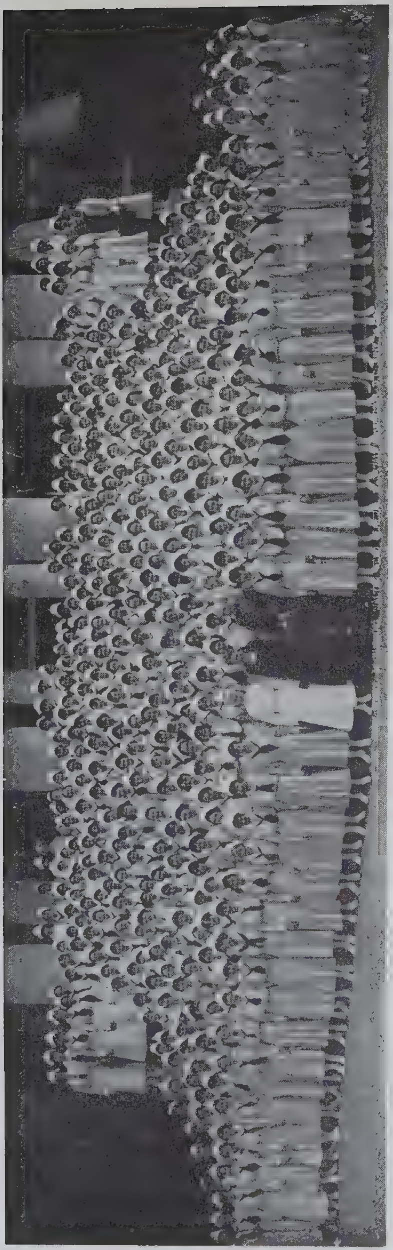

Figure 272. Class of 1921, Army School of Nursing. (Courtesy of The Modern Hospital Publishing Co.)

In order to recruit many women who were motivated to study nursing, the *Army School of Nursing* was organized in 1918 with *Annie W. Goodrich* as dean. For those interested in meeting the nursing needs at home, classes in "Home Hygiene and Care of the Sick" were formed.

Annie W. Goodrich[10] was the originator of the plan for an *Army school of nursing.* Anna Jammé was her assistant in 1918. Begun in 1918 as a war measure, the school was also designed to be a permanent organization. The course lasted for three years, and nine months' credit was given to college graduates. The work was centered in the Army hospitals, with affiliations in civilian hospitals. At the height of war enthusiasm, the applicants numbered in the thousands.

The first graduating class, in 1921, numbered 500, with 400 graduating at the Walter Reed Hospital, Washington, D. C., and 100 at Letterman Hospital, San Francisco. It was unquestionably the largest class of nurses ever graduated at one time in the world's history. The school continued, but with smaller classes. It was discontinued in 1932 for economic reasons.

Since Canadian nurses had had officers' rank since 1906 and other countries gave their nurses a semi-official status, American nurses felt the need of rank. In 1920, after the war was over, enough pressure was made so that "relative rank" as officers was granted to nurses.

Julia Stimson (1881–1948) graduated from Vassar before entering the New York Hospital School of Nursing. She succeeded Miss Goodrich as dean of the Army School of Nursing. Miss Stimson then held the position of superintendent of the Army Nurse Corps. She agreed with the concern felt by the members of the nursing profession at the lack of rank for military nurses. When relative rank was awarded to nurses through the Army Reorganization Act of 1920, she became *Major Stimson.* She served later as president of the American Nurses' Association.

The Army School of Nursing ceased accepting students in 1931 and the last class graduated in 1933. This school was organized in an excellent fashion and set a superb example for all other schools to emulate.

On November 11, 1918, the armistice was signed. Troops and medical units began to return home.

Although the nurses of World War I seemed to receive less recognition in the United States than elsewhere, they had in their hearts the consciousness of work well done, of the gratitude of the men and of what they felt was great fortune—to have been able to serve in this historic war. "Never before had such a thing occurred, the sending across three thousand miles of danger-strewn seas of ten thousand soldier-women, to be part of a great expeditionary force."

EVALUATION OF NURSING

The war had terminated, the ghastly influenza pandemic had subsided, and a hopeful, peaceful country could now assess strengths as well as areas needing strengthening. A period of critical analysis developed in the field of nursing when the *Rockefeller Foundation* financed a survey of nursing education. *Dr. C. E. A. Winslow* was the chairman and the following were members of this epoch-making committee: C. E. A. Winslow, D.P.H., Chairman; Mary Beard, R.N.; H. M. Biggs, M.D.; S. Lillian Clayton, R.N.; Lewis A. Conner, M.D.; David Edsall, M.D.; Livingstone Farrand, M.D.; Annie W. Goodrich, R.N.; L. Emmett Hold, M.D.; Julia C. Lathrop; Mrs. John Lowman; M. Adelaide Nutting, R.N.; C. G. Parnall, M.D.; Thomas W. Salmon, M.D.; Winford H. Smith, M.D.; E.G. Stillman, M.D.; Lillian D. Wald, R.N.; W. H. Welch, M.D.; Helen Wood, R.N.; Josephine Goldmark, Secretary.

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[10] Miss Goodrich was a graduate of the New York Hospital, and was superintendent of nurses at the Post-graduate Hospital, her own school, and Bellevue Hospital, New York. She was long connected with Teachers College, Columbia University, and was for a considerable time at the Henry Street Settlement. She became dean of the Yale School of Nursing in 1924, and retired in 1936. She was given the following honors: Sc.D. (Hon.) Mount Holyoke College, 1921; M.A. (Hon.) Yale University, 1923; Dcotor of Laws (Hon.) Russell Sage College, 1936; Fellow, American College of Hospital Administrators, 1948; Medal of National Institute of Social Science; Distinguished Service Medal of the United States; Medaille d'Honneur de l'Hygiene Publique (French Government); Walter Burns Saunders Medal; Silver Medal of the Ministry of Social Welfare (French Government); Bronze Medal of Belgium; Adelaide Nutting Medal; Yale Medal "for outstanding service to Yale"; and in 1939 was voted one of twelve outstanding women of last fifty years by New York Career Tours for Women.

The findings and conclusions of this survey were published in February 1923 in a book called *Nursing and Nursing Education in the United States*. This remarkable report, frequently referred to as the Goldmark Report, should be read in its entirety for many of its suggestions have not yet been comprehended.

The members of this committee were aware of many of the weaknesses in the educational preparation of nurse practitioners. It was evident that nursing in 1922 was still on an apprenticeship basis of an earn-while-you-learn-system. This type of preparation had been abandoned by other professions which demanded specialized professional or technical education. It was apparent that nursing was still struggling with the problem of serving two masters: the care of the sick in the hospital and the education of the nurse. In stressful situations the first assumed the more important role while the latter was neglected.

Many of the instructors were poorly prepared as was illustrated thus: In one hospital, the course in anatomy and physiology, which was of nine months' duration, was interrupted seven times by the entrance of a new class which studied the subject at whatever point it was being presented. The instructor explained that "it makes no difference in anatomy, as one part is not dependent on another."[11]

The lack of well prepared teachers was a problem, as was the quaint custom of admitting a student to replace every student who withdrew from the school.

The following conclusions are noteworthy:

> *Conclusion 1.* That, since constructive health work and health teaching in families is best done by persons:
>
> (a) capable of giving general health instruction, as distinguished from instruction in any one specialty; and
>
> (b) capable of rendering bedside care at need;
>
> the agent responsible for such constructive health work and health teaching in families should have completed the nurses' training. There will, of course, be need for the employment, in addition to the public health nurse, of other types of experts such as nutrition workers, social workers, occupational therapists, and the like.
>
> That as soon as may be practicable all agencies, public or private, employing public health nurses, should require as a prerequisite for employment the basic hospital training, followed by a postgraduate course, including both class work and field work, in public health nursing.
>
> *Conclusion 2.* That the career open to young women of high capacity, in public health nursing or in hospital supervision and nursing education, is one of the most attractive fields now open, in its promise of professional success and of rewarding public service; and that every effort should be made to attract such women into this field.
>
> *Conclusion 3.* That for the care of persons suffering from serious and acute disease the safety of the patient, and the responsibility of the medical and nursing professions, demand the maintenance of the standards of educational attainment now generally accepted by the best sentiment of both professions and embodied in the legislation of the more progressive states; and that any attempt to lower these standards would be fraught with real danger to the public.
>
> *Conclusion 4.* That steps should be taken through state legislation for the definition and licensure of a subsidiary grade of nursing service, the subsidiary type of worker to serve under practising physicians in the care of mild and chronic illness, and convalescence, and

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[11] Winslow, C. E. A., et al.: *Nursing and Nursing Education in the United States.* New York. The Macmillan Co., 1923, p. 224.

possibly to assist under the direction of the trained nurse in certain phases of hospital and visiting nursing.

Conclusion 5. That, while training schools for nurses have made remarkable progress, and while the best schools of today in many respects reach a high level of educational attainment, the average hospital training school is not organized on such a basis as to conform to the standards accepted in other educational fields; that the instruction in such schools is frequently casual and uncorrelated; that the educational needs and the health and strength of students are frequently sacrificed to practical hospital exigencies; that such shortcomings are primarily due to the lack of independent endowments for nursing education; that existing educational facilities are on the whole, in the majority of schools, inadequate for the preparation of the high grade of nurses required for the care of serious illness and for service in the fields of public health nursing and nursing education; and that one of the chief reasons for the lack of sufficient recruits, of a high type, to meet such needs lies precisely in the fact that the average hospital training school does not offer a sufficiently attractive avenue of entrance to this field.

Conclusion 6. That, with the necessary financial support and under a separate board or training school committee, organized primarily for educational purposes, it is possible, with completion of a high school course or its equivalent as a prerequisite, to reduce the fundamental period of hospital training to 28 months, and at the same time, by eliminating unessential, non-educational routine, and adopting the principles laid down in Miss Goldmark's report, to organize the course along intensive and coordinated lines with such modifications as may be necessary for practical application; and that courses of this standard would be reasonably certain to attract students of high quality in increasing numbers.

Conclusion 7. Superintendents, supervisors, instructors, and public health nurses should in all cases receive special additional training beyond the basic nursing course.

Conclusion 8. That the development and strengthening of University schools of Nursing of a high grade for the training of leaders is of fundamental importance in the furtherance of nursing education.

Conclusion 9. That when the licensure of a subsidiary grade of nursing service is provided for, the establishment of training courses in preparation for such service is highly desirable; that such courses should be conducted in special hospitals, in small unaffiliated general hospitals, or in separate sections of hospitals where nurses are also trained; and that the course should be of 8 or 9 months' duration; provided the standards of such schools be approved by the same educational board which governs nursing training schools.

Conclusion 10. That the development of nursing service adequate for the care of the sick and for the conduct of the modern public health campaign demands as an absolute prerequisite the securing of funds for the endowment of nursing education of all types; and that it is of primary importance, in this connection, to provide reasonably generous endowment for university schools of nursing.

DEVELOPMENT OF ENDOWED UNIVERSITY SCHOOLS OF NURSING

Two of the history-making results of the Rockefeller study were the establishment of *Yale University School of Nursing* in 1923 financed by Rockefeller Foundation, and with *Annie W. Goodrich* as dean, and the foundation of *Western Reserve University School of Nursing* endowed by Frances Payne Bolton and with Miss *Carolyn E. Gray* as dean.

Yale University School of Nursing was established on the fiftieth anniversary of the founding of the Connecticut Training School for Nurses which it succeeded. Provision for *educational leadership* as well as a background in *public health nursing* was incorporated into the curriculum. The degree of Bachelor of Nursing was given to graduates from 1926 to 1936; then, the degree of Master of Nursing was awarded until this famous school was closed in 1958.

Annie W. Goodrich felt collegiate nursing education was the preferred type of education for all nurses, "It is desirable that nursing education should find its place in the university, which is another way of saying that it belongs where all educational expressions have been increasingly placed, and for the reason that universal knowledge is here assembled and distributed in accordance with the needs of the students as future builders of the community."[12]

Miss Goodrich was succeeded by *Effie J. Taylor,* a Canadian by birth, who graduated from Johns Hopkins School of Nurs-

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[12] Goodrich, Annie W.: *Social and Ethical Significance of Nursing.* New York, The Macmillan Co., 1932.

Figure 273. The three deans of Yale School of Nursing: Annie W. Goodrich, 1923–1934; Effie J. Taylor, 1934–1944; Elizabeth Bixler, 1944–1958.

ing. She had received her degree from Columbia; had been on the staff of the Phipps Psychiatric Institute at Johns Hopkins; had served in the First World War; and went to Yale in 1923. She was president of the International Council of Nurses during World War II. Elizabeth Bixler, a graduate of Yale University School of Nursing, succeeded Miss Taylor as dean until the closing of the basic program.

The first nurses' settlement was the well known Henry Street Settlement, New York City, founded in 1893 by Lillian D. Wald. From this informal start there has developed a remarkably well organized health center, with varied activities for the betterment of life among the poor. Miss Wald herself became an authority upon many matters connected with social service.

Public health nursing began under voluntary philanthropic organizations that employed one or two nurses. Their service demonstrated their value and attracted public attention and support, including that of local and state Boards of Health who began to employ nurses.

Visiting nurses have always come into intimate contact with people in their homes, with the result that they not only care for patients, but teach the family how to help; they also assist with preventive work, helping the family keep well. They do not merely teach, but also demonstrate *with the materials at hand;* the visiting nurse helps, instructs, prevents.

The U. S. Public Health Service openly proclaims its dependence on the public health nurse. General Thomas Parran, when head of this service, said, "In this country more than any other, with the possible exception of Canada, there is almost complete recognition among public health officers and citizens alike of nursing as the spearhead of the whole public health movement. Dependence is placed upon it to advance new causes and to serve new needs."

The great foundations have aided materially in setting patterns and aiding public health work; they do not replace government projects, but supplement them or do what governments cannot undertake.

The *Rockefeller Foundation,* established in

Figure 274. Lillian D. Wald. (Courtesy of Visiting Nurse Service of New York.)

Figure 275. A nurse from Henry Street Visiting Nurse Service stops to inquire about the health of a baby she had known through visiting the family (1925). (Courtesy of Visiting Nurse Service of New York.)

1913, has as its goal "To promote the well-being of mankind throughout the world." It has given financial aid in millions of dollars to art, agriculture, education, medical and nursing schools, disease control and many other projects, and is interested in psychiatry, genetics and nutrition. Its oldest division is public health. The Foundation has a science staff in Europe, Asia, Africa and Latin America, making studies that involve work in nine Oriental languages. In 1944 it expended ten million dollars.

The Rockefeller Foundation has long been interested in nursing education and has given material help to schools in Europe, Asia and Latin America. For over twenty-five years it has granted travel fellowships for nurses, some hundreds having had this advantage. It has given money to medical schools and to several collegiate schools of nursing for special programs.

The *Near East Foundation* has for many years done public health work in the lands about the eastern end of the Mediterranean. Its policy has been to undertake a project with the government of a particular country, with the arrangement that when the work was established that country would take it over and carry it on.

The *Commonwealth Fund,* with a backing of $50,000,000, has, over a period of twenty-five years, built more than a dozen hospitals in widely scattered rural areas, making them community health centers, and has studied their disadvantages and advantages. It recently undertook experiments in *regional* hospital organization and in mobile *diagnostic* units.

The *W. W. Kellogg Foundation* has done much to help nursing education in public health and other educational projects. One of its special interests is rural health work.

The *Bingham Associates* of New England is sponsoring a program of *regional* health work in Maine and western Massachusetts, cooperating with the Kellogg and Commonwealth Foundations. It employs a full-time nurse consultant.

The *Thompson Foundation,* Boston, with a fund of ten million dollars made a number of surveys of the care of middle class people in illness and gave publicity to its findings. It experimented with community health projects in Vermont and New York states, and has become interested in the training of practical nurses.

Mary S. Gardner (1871–1961) of Providence, R. I., founded there an outstanding visiting nurse organization. Her book on the subject was the first and for long the only text available. She was for many years recognized as a national authority in public health nursing, and is internationally known.

Miss Gardner, R.N., M.A., graduated from Newport (R. I.) Hospital, and was director of the Providence District Nursing Association until 1931. During part of this time she assisted the Red Cross in Washington and Italy (with Edna Foley) and inspected Red Cross child welfare work in Europe. She was the second president of the N.O.P.H.N. and chairman of the public health nursing section of the International Council of Nurses. She has written *Public Health Nursing, So Build We,* and *Katherine Kent,* the last two being novels of public health nursing.

Figure 276. Mary Sewall Gardner.

Lavinia Lloyd Dock was another pioneer in public health nursing. She came from a cultured philanthropic family. She and her brother shared an interest in the medical fields of endeavor. This brother became a professor of medicine in the schools of medicine at the University of Michigan and Washington University.

Miss Dock entered Bellevue Training School for Nurses from which she graduated in 1886. Her first assignment was with a pioneering effort called the United Workers of Norwich, Connecticut. This group wanted to try a three months experiment whereby a trained nurse would take care of the sickness in the community. Through her efforts it was a successful experiment. She volunteered for service during a yellow fever epidemic, was one of the group of visiting nurses with the New York City Mission, and finally became assistant to Miss Hampton (Mrs. Robb) at Johns Hopkins Hospital. After a brief experience as principal of the Illinois Training School for Nurses in Chicago, she joined the Henry Street Settlement in New York City to work with Lillian Wald. Interest in her patients prompted Miss Dock to spend her free time studying languages.

It was the belief of Lavinia Dock that a public health movement on a world basis would emphasize prevention, thereby creating a need for a better educated nurse than the bedside nurse of the time.

Miss Dock was the first secretary of the American Society of Superintendents of Training Schools for Nurses. In addition, she was the first secretary of the Interna-

Figure 277. Mary Beard. (Courtesy of *The Trained Nurse and Hospital Review.*)

tional Council of Nurses. The nurses of the United States and the world profited by her wisdom and guidance as an officer of both organizations and a contributor of many articles to the early issues of the *American Journal of Nursing.* Her gift for writing has been preserved in her early textbooks: *A Materia Medica for Nurses* and *Hygiene and Morality,* as well as the magnificent contribution of the four-volume *History of Nursing* which she authored in collaboration with M. Adelaide Nutting. This remains a lasting memorial to two brilliant, scholarly, and gifted leaders of nursing.

Mary Beard was a member of the international health committee of the Rockefeller Foundation and was head of the American Red Cross Nursing Service. Ella Phillips Crandall, Edna Foley and Harriet Fulmer were also prominent in public health nursing early in this century; Katherine Tucker, Elizabeth G. Fox, Marion Howell and others were also connected with public health nursing.

NURSING IN OCCUPATIONAL HEALTH

The nurse in the field of *occupational health* usually works in factories, department stores, telephone companies, or in any industrial plant. She may give first aid in injury or sickness, call a doctor if necessary, help with medical examinations, assist with safety and health education and control, do follow-up work with detected physical defects or with sick employees in their homes, and even engage in what is in effect social service.

Health care has been largely a twentieth-century development, and until about 1920 there was little general interest in it. Even now some employers do not realize that half-sick men do not produce as much as expected, that absence from illness cuts into profits and that it pays in money to care for the health of workers. Insurance companies first called attention to this, and when workmen's compensation laws came into force, employers realized the value of health care. The National Safety Council has done much in the prevention of accidents and industrial diseases; in recent times, especially during World War II, when many new chemical substances were used in manufacturing, some poisonous or seriously irritating, that subject became important.

The actual beginning of industrial nursing is difficult to trace, since many isolated firms employed one nurse, full or part time, and these nurses did different work under different conditions. The first industrial nurse in the United States was Ada Stewart (Mrs. Markoff), with the Vermont Marble Co., Proctor.

A few employers established *hospitals*

early for injured employees. The Manufacturing Co., Lowell, Massachusetts, had such a hospital in 1859, the first of which there is any record. The second was probably a log cabin in Lead, South Dakota, which from 1877 cared for mining injuries. In 1881 the Colorado Fuel and Iron Co., Pueblo, established an industrial hospital with male nurses, which grew into an excellent permanent institution. In 1893 the Union Pacific railroad established an industrial hospital.

Boston University, 1917, was probably the first college in the United States to give a *course in industrial nursing.* Simmons College established such a course in 1919 (for college graduates), discontinued it, and began it again in 1942. The University of Minnesota, Wayne University, Detroit and Columbia Universities also gave courses.

The industrial nurse needs to know not merely her basic work and prevention of disease; she must also have a knowledge of industrial hazards, safety rules, labor laws (including her own legal limitations), plant hygiene, community hygiene and whatever health programs are being undertaken. She may be a consultant to state hygiene departments in the U. S. Public Health Service.

The American Association of Industrial Nurses was formed in 1942. It has established standards for the work. In 1944 the American Nurses' Association created a section for industrial nurses; and ten or more states have industrial sections in their associations. The National Association of Manufacturers requested a pamphlet on the qualifications of an industrial nurse, and distributed 20,000 copies of it. The national association met in 1944 *in joint session* with the American Association of Industrial Physicians. The United States Public Health Service has an industrial nurse consultant. These things mean recognition. The Association established its own magazine, the American Association of Industrial Nurses' Journal.

President Roosevelt made the whole country conscious of the problem of infantile paralysis and stimulated people to make large contributions to its relief. *Sister Elizabeth Kenny* of Australia was known as a teacher of special forms of treatment in infantile paralysis. In the United States she was well received by prominent doctors. The Shriners' Hospital for Crippled Children, extending its work over large areas, has been in existence for more than a quarter of a century.

Insurance nursing was begun early in this century by two large life insurance companies (the Metropolitan and the John Hancock) as a form of public health nursing. In 1909, at the suggestion of Lillian Wald, the Metropolitan Life Insurance Company organized a visiting nurse department with the Henry Street Settlement in New York City. Later, the services of the visiting nurses were extended to the company's industrial policyholders. They found that this service not only shortened a period of illness but sometimes prevented it, and so was of financial advantage to both employer and employee. It has now been gradually taken over as part of the routine duties of public health nurses.

Many nurses specialized in the care of patients with communicable diseases. In 1903 a nurse was appointed to replace the medical student and devote her full time to the home care and instruction of patients with tuberculosis. By 1910, the tuberculosis work was assumed by the city departments of health.

MATERNAL AND CHILD HEALTH

In Europe *midwifery* has always been considered an important specialty, with a two year course commonly required. For-

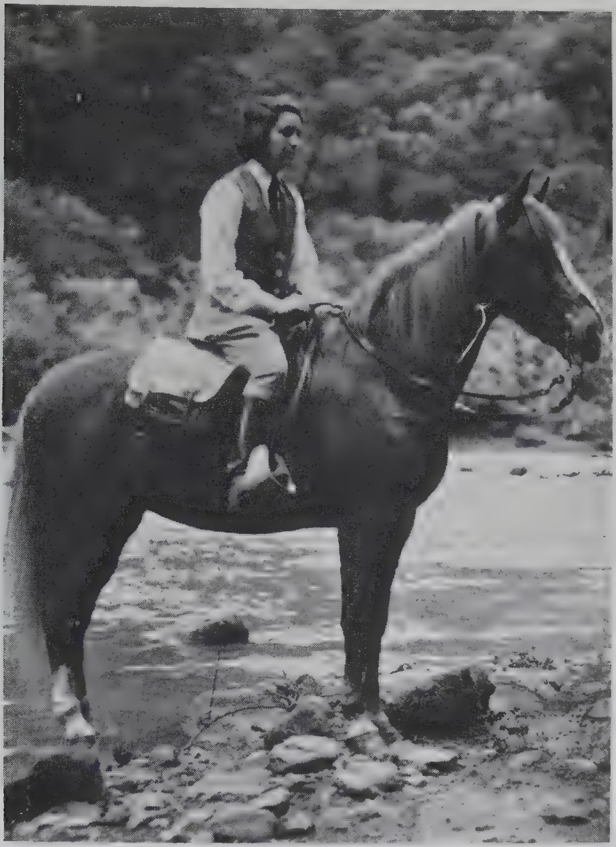

Figure 278. Nurse midwife, Frontier Nursing Service, Kentucky.

merly in England nearly all state-registered nurses were registered midwives as well.

In the United States the subject had been neglected despite the fact that the maternal death rate had been high and that a considerable number of untrained, ignorant midwives were practicing. The training of nurses in midwifery had been prevented by the attitude of the medical profession, who held the ideal that every woman should be aided in delivery by a physician. In actual fact, thousands of women live where no doctor is available; other thousands employ incompetent midwives. Especially in rural districts is the need of the midwife nurse apparent. One million women annually in the United States have deliveries without the aid of a physician and a quarter of a million are attended by untrained women.

In 1911 Bellevue Hospital, New York, founded a *school of midwifery* to help care for the 40,000 mothers per year in New York who were assisted in delivery by untrained women. There are now four centers of midwifery training for nurses: the New York Maternity Center, in cooperation with the Lobenstine Clinic; Tuskegee Institute, Alabama; Mary Breckenridge's Frontier Nursing Service, Kentucky; and the Catholic Maternity Institute, Santa Fe, New Mexico, established in 1944.

The Catholic Maternity Institute is under the Medical Mission Sisters, a Catholic organization founded in 1925 which has centers in England, Holland and India. The sisters are fully trained doctors, phar-

Figure 279. Mary Breckenridge. (Courtesy of the *American Journal of Nursing.*)

macists, nurses and technicians who do missionary work at home and abroad.

Through the influence of the sisters at Santa Fe, New Mexico now has a *law requiring* state registration for midwives, who must be registered nurses and have had an approved course in midwifery. For the United States this is a great advance.

The first organized *midwifery service* in this country was conducted by *Mary Breckenridge,* a graduate of St. Luke's, New York, who had organized public health nursing in France. Until recently Miss Breckenridge used English-trained nurse midwives since there were few in this country. Her nurses often go on horseback to assist women in childbirth who live in remote places.

The *Indian Affairs Nursing Service* has existed for a long time, and since 1925 is greatly improved. Its doctors and nurses work chiefly in Alaska and the West where it has hospitals and sanitaria for Indians and does good rural public health work.

HOSPITAL SOCIAL SERVICE

"Social service" is a term that covers the whole field of philanthropy. Including all activities whereby men serve their fellow men, it is defined as "those activities which deal directly with personality, family and community, and are not strictly medical nor educational. . . . It helps adjust the lives of human beings who are unable to take advantage of what is offered, to lead the life they must lead with the resources at hand." *Hospital social service* limits the work to whatever may be done toward establishing the patient's bodily health, and involves questions not only physical, but moral and spiritual as well.

In 1902 some of the students of Johns Hopkins Medical School organized friendly visiting in connection with the Charity Organization of Baltimore, thus early recognizing the social side of illness. In 1904 the National Conference of Charities invited the visiting nurses of the country to join with the "other social workers" at their annual meeting. Nurses expressed concern about the instructive aspects of patient care taking priority over skilled nursing.

In 1905 Dr. Richard Cabot, an eminent medical man, seeking to improve outpatient practice in Boston, founded at the Massachusetts General Hospital a hospital social service department. This established the principles and set the standards for the whole country and has influenced the entire world.

Dr. Cabot was assisted capably by *Ida M. Cannon,* a nurse who became an authority on hospital social service.

In 1906 the work was established at Bellevue Hospital, New York, by Mary A. Wadleigh, a nurse, with the help of Lillian Wald of the Henry Street Settlement. In 1925 it was reported that 600 hospitals had social service departments. This department is now considered to be an essential part of every hospital in every community, and has been adopted abroad.

Figure 280. Ida M. Cannon.

PRIVATE DUTY NURSING

For many years far more nurses went into private duty than into any other field. This was partly because the demand was great and there were few opportunities in other fields, and partly because private duty did not demand and was not supposed to need any preparation beyond the nurse's basic training.

Even before the depression of the 1930's, it was recognized that the situation of the private duty nurse presented a problem. The difficulties were largely economic, both for patient and nurse. Surveys were made in the 1920's which showed that about 10 per cent of all the sick were cared for in hospitals and about 10 per cent had paid nurses at home or received some care from public health nurses. *Eighty per cent* were cared for as they were centuries ago, by members of their families or untrained neighbors.

Private duty nursing came to be recognized as a highly irregular job, one in which both work and salary were unpredictable. It became a job without supervision, without opportunity for advanced study and one in which experience was uncompensated.

In the work of the Committee on the Grading of Nurses, private duty was found to be one of the major problems that affected both nurses and the public and in which there was deep dissatisfaction on both sides. This committee ably analyzed the problem but did not attempt to suggest remedies.

The American Nurses' Association in 1914 established a private duty section, but it was not active for many years.

Private duty was usually for twenty-fours hours in homes, and might be the same in hospital "specialling." Often the nurse slept on a cot in the patient's room. Doctors and nursing superintendents could offer no help, since the matter was entirely economic. Hospital trustees and the public had no understanding of the situation.

PSYCHIATRIC NURSING

Remarkable changes have occurred and notable progress has been made in the field of psychiatric nursing in recent years. The *National Mental Health Act* of 1946, which proved that the matter was of public concern, has as its purpose "to improve mental health, help research, train personnel and better the treatment of the mentally ill."

In 1950 the *National League of Nursing Education* made a study of psychiatric nursing. It found the number of nurses doing psychiatric work was rapidly increasing. *Male* nurses in psychiatry are still too few, the ratio being only about one man to fourteen women.

GERIATRIC NURSING

For various reasons, the average length of human life has markedly increased. Epidemics are fewer, preventive medicine is active, health knowledge greater and the government is more interested in health preservation. As a result of this there are more persons over fifty-five than ever before in history, and the number of those who are chronically ill is larger because they are given care and do not die from neglect. One person in fifty is said to be chronically ill, most of such persons being past sixty.

A number of hospitals for patients with long-term illnesses, notably state infirmaries and hospitals under the direction of religious sisters or deaconesses, have done outstanding work. Public health nurses care for multitudes of such patients in their homes and teach their families efficient care. (The Community Health Association of New Orleans some time ago established a "service for elderly people," with special monthly rates.)

At the end of the *twenties,* there had been marked expansion in the development of the field of nursing.

In 1900 there were 160 medical schools and 432 schools of nursing. By 1926 there were 79 medical schools and 2,155 schools of nursing.

The medical profession had responded to the suggestions of the Flexnor Report. There were fewer schools, but the schools had been enriched and improved.

The recommendations of the Goldmark Report were being initiated by the nurse leaders. Many poor schools had closed; high school graduation as a requirement for admission was becoming uniform; the forty-eight hour week was beginning to be maximum with forty-four hours and forty hours accepted in many areas; the curriculum was being enriched; faculty members were becoming part of the school; graduate staff nurses were assuming the nursing service responsibilities freeing the students for some classwork during the day and eliminating after-duty class hours; and university schools of nursing grew.

In 1925 a committee sponsored by the American Nurses' Association undertook a five year study of nursing and nurse training. This was the *Committee on the Grading of Nurses,* with members who were laymen and women, and doctors and nurses, and the director an educator, May Ayres Burgess. Nurses themselves gave $115,000 to the project. The committee found it impossible to do an actual grading of schools.

The study included all schools which would cooperate in ten states, large and small, representative of the different parts of the country. Its two reports were *Nurses, Patients and Pocketbooks* and *Nursing Schools Today and Tomorrow.* These reports exerted a remarkable influence on schools of nursing; the mere statement of unpleasant or discouraging facts stimulated action and brought marked improvement.

National accreditation was inevitable. In 1936 the *National League of Nursing Education* undertook it and in 1938 had outlined a program. Their purpose was announced: "To set up a list of good schools of nursing, judged in terms of their own stated purpose." No arbitrary standard was used and no endeavor was made to fit all schools to one pattern. Actual accrediting was begun in 1939, fifty schools being accredited in that year, which made a basis for further study of values.

In the *thirties* the financial developments of the depression caused a great oversupply of nurses, especially for private duty. The supply exceeded the demand, causing a lowering of income throughout the nursing profession.

Much had been accomplished in this century although nurses were classified as subprofessionals by the United States Civil Service Commission in 1923. The United States Census of 1930 classified nurses as "semi-professional." The 1940 Census placed nursing among the professions while the Veterans Administration continued until 1945 to classify them as "sub-professional."

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XIV

The Twentieth Century (Continued)

More than ninety years ago Miss Nightingale's foresight made her found the school at St. Thomas' as an *educational institution.* Its features were: (1) Nurses were primarily students. (2) Heads of departments were chosen for their teaching and organizing ability. (3) The school was liberally endowed and thus in control of its own activities.

Though Miss Nightingale stated her principles clearly, they have been largely misunderstood. In consequence, many schools of nursing, from her time until now, have been organized with the purpose "to provide better nursing for the hospital." Even now these two different ends, nursing service and nursing education, are misunderstood. It is a well recognized fact that there is *no other educational project in which students carry responsibility for the work* of an organization.

Economic pressure has been the chief cause of this confusion, though that idea was discussed for at least two decades before any analysis of it was made.

Administrative Cost Analysis for Nursing Service and Nursing Education, 1940, was a study made under the American Hospital Association and the National League of Nursing Education. It greatly clarified the chaos of ideas existing on the monetary value of student nurses' work. It worked out the number of hours' care given in each twenty-four hours to different types of patients, the cost of housing, feeding and educating student nurses, and arrived at definite conclusions.

For more than half a century, directors of schools of nursing have been perplexed by the problem between trying to *educate their nurses* and at the same time with the same personnel to *get the patients in hospitals cared for.* As a rule, the two aims came into sharp conflict, and since the care of patients was of paramount importance, it was nursing education that assumed second place. For many years hospitals absorbed the nurse's whole time, always her social life, often her health; her personal life was given little consideration.

In the past, the educational foundation for all professions was not well defined.

World War II had a profound influence on nursing. In the United States almost revolutionary changes came about as a direct result of it. In other countries the same was true.

The war began in July, 1937, when *Japan* attacked *China.* In 1938 difficulties in *Europe* became intensified, including the Munich fiasco. In 1939, with the invasion of Poland and Finland, *Britain* and *France* were involved in war with *Germany.* The year 1940 saw the invasion of Denmark, Norway, Belgium and Holland in quick succession; and in May came the terrible British disaster at *Dunkirk,* which not only roused the Empire, but suggested to America that the war might become our concern. We were still predominantly isolationist. In June, the Germans were in *Paris,* and their Italian allies were in the south of France. September brought a definite alliance between *Germany, Italy and Japan.* The British went into North Africa. In 1941, the American people, still not seriously alarmed, were induced by President Roosevelt, who had grasped the situation, to give *lend-lease* help to Britain. Germany invaded the Balkans that year, and after agreement to the contrary, attacked and rapidly invaded *Russia.* In August the *Atlantic Charter* was ratified. Then, on December 7, 1941, *Japan* made her incredible attack at *Pearl Harbor.*

Early in 1941 the United States had begun to draft men by the thousands. Many nurses were needed for the great army camps established throughout the country, and many responded to the Government's appeal.

As early as 1940 two American medical units went to help the Allies, one sent by Harvard University to England, and an American-Scandinavian unit to Poland.

Even earlier, in the spring of 1940, our nursing leaders had comprehended the potential need and had formed the *Nursing Council of National Defense,* composed of representatives from all the national nursing bodies (the A.N.A., the N.L.N.E. and the N.O.P.H.N.), the Red Cross Nursing Service, the Federal nursing services, the Association of Collegiate Schools of Nursing and the National Association of Colored Graduate Nurses. Major Julia Stimson was chairman of this Council. Plans were made to cooperate with Canada, Central and South America.

In 1942 this body became the *National Nursing Council for War Service.* In order to increase the number of nurses for military service and at the same time to see that civilians were cared for, it planned refresher courses for graduate nurses, pooled teaching staffs, and was available for consultant service.

From 1940 there was a National Nurses' Committee on Procurement and Assignment,[1] with branches in each state, which *classified* nurses as essential or nonessential, about 300,000 in all being considered individually.

In the summer of 1941, the U. S. Congress was induced to appropriate $1,250,000 for nursing education, and in 1942, $3,500,000—an epoch-making action. This was accomplished by a laywoman, Frances Payne Bolton, Congresswoman from Ohio, under what is known as the Bolton bill. This provided for: (1) refresher courses for graduate nurses; (2) assistance to schools of nursing so that they might increase their student body (nurses' homes, classrooms, laboratories); (3) postgraduate courses; (4) preparation for instructors and other personnel; and (5) training in midwifery and other specialties.

Never before had the Government recognized nurses as a group; still less had it concerned itself with their advancement. This was an important milestone in the history of American nursing.

In 1942 Mrs. Bolton sponsored in Con-

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[1] The title proved to be a misnomer.

Figure 281. Hon. Frances Payne Bolton, sponsor in U. S. Congress of the bill which created the U. S. Cadet Corps.

gress a second bill, creating the *U. S. Cadet Nurse Corps.* This had been carefully planned by the *National Nursing Council for War Service,* and it aimed to increase as rapidly as possible the number of nurses in the country.

"Relative" military rank had been granted to both Army and Navy nurses by which they had the authority of officers, though they were not commissioned. On June 22, 1944, President Roosevelt signed an executive order making the Corps an integral part of the army, its personnel to receive the same pay and prerogatives as other officers. This order became effective on July 12, when the Corps numbered approximately 40,000 nurses. On April 16, 1947, the *Army-Navy Nurse Act* (Public Law 36) was enacted which authorized permanent commissioned status for Army nurses. Florence A. Blanchfield became the first woman to be given a permanent commission in the regular Army as "Colonel."

The Army nurses were assigned to nine stations and 52 areas throughout the world; the Navy nurses, to a dozen hospital ships and in more than three hundred naval stations.

Some nurses did not go overseas, but worked in the eighty Army hospitals of the home country. (There were about 600 Army hospitals abroad with 18,000 beds, and forty-three Navy hospitals and ten thousand berths on hospital ships.)

Hospitals asked, and got, thousands of untrained *volunteers,* both men and women, for all sorts of tasks. Many business and professional men spent their evenings as orderlies. The American Red Cross, under the U. S. Director of Civilian Defense, did an outstanding piece of work in training aides.

On July 1, 1949, a separate *Air Force Nurse Corps* was established with a transfer of Army nurses desiring this assignment.

All through the war the work of nurses had special attention from both the government and the public. Hundreds of significant decorations and citations were bestowed on them. 1,619 nurses (approximately one out of every forty) were decorated with such medals as the Army Commendation ribbon, the Bronze Star, the Air Medal, the Distinguished Service Medal, the Silver Star and the Distinguished Flying Cross.

Regret was expressed by the government that no way was found, other than public commendation, to reward the no-less-heroic services of instructors and thousands of personnel who remained on duty in civilian hospitals. Dr. Parran of the U. S. Public Health Service gave certificates "for meritorious service" to the instructors of more than a thousand schools who "prepared the largest classes of student nurses in history."

Generals and medical officers gave high praise. "Those who know the record of the *Army* nurses since the days of the Crimea are not surprised that they proved themselves the equal of men under combat conditions."[2] "Their untiring service, their professional skill, and their ability to sustain the unparalleled morale of the wounded in their care will always reflect the highest credit to the Nurse Corps, U. S. Navy."[3]

WORLD WAR II AND NURSING EDUCATION

When the United States was attacked and millions of men were needed for the armed forces, we began to realize that an enormous number of nurses would be required. The National Nursing Defense Committee, which had faced the possibility, now became the National Nursing Council for War Service. Graduate nurses responded valiantly to the call, but sick civilians were in danger of neglect. Some of the women on the national committee, remembering the tragic shortages of nurses in World War I, were gravely apprehensive. Serious consultation lasted for months before Pearl Harbor. The situation was met with courage and constructive thinking; the outcome was the *United States Cadet Nurse Corps.*

In June, 1943, the Bolton Act was passed by Congress, and the Corps became a fact. It was placed under the Division of Nurse Education of the U. S. Public Health Service. The Bolton Act created a great system of scholarships given by the Government to qualified young women—those who met the requirements of their respective state boards and of the schools to which they might apply. It was the largest project for nursing education ever planned.

From that time, about 95 per cent of all nursing students were enrolled in the Cadet Corps. Much publicity was given the Corps, and during its first year 65,000 students enrolled in it. The total number who joined the Corps was 179,000. The first two schools to enroll in the Corps were Freedman's (Negro) and Providence (Catholic) of the District of Columbia.

The administrator of the Corps was the Director, Division of Nurse Education, U. S. Public Health Service, Lucile Petry Leone. She received a B.A. degree from the University of Delaware; graduated from Johns Hopkins Hospital School of Nursing, and earned a Master of Arts from Columbia University and a Doctor of Sci-

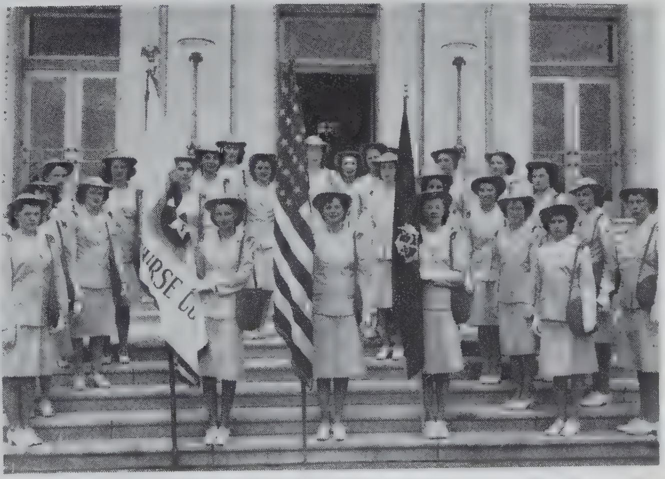

Figure 282. U. S. Cadet Nurse Corps, First anniversary. (U. S. Public Health Service, Federal Security Agency.)

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[2] Editorial, *New York Tribune,* 1943.

[3] Admiral William F. Halsey.

Figure 283. Nurse Director Lucile Petry Leone, of the Commissioned Nurse Corps, U. S. Public Health Service. (U. S. Public Health Service.)

ence from the University of Delaware. She holds the doctoral degrees of L.L.D. from the University of Syracuse; the L.H.D. from Adelphia College and Keuka College; Litt. D. from Wagner College; D. Sc. from Boston University and Hood College. She has been a member of the Nursing Advisory Committee of the W. K. Kellogg Foundation since 1945 and was an advisory member of the United States Delegation to the World Health Assembly in 1948 and in 1956. In 1949 Mrs. Leone was appointed *Assistant Surgeon General* in the U. S. Public Health Service.

The very name *practical nurses* has long been under discussion. Nurses who practice without full training had been called attendants, subsidiary nurses, auxillary nurses, or assistant nurses. The formal definition of practical nurse is: A person trained to care for subacute, convalescent and chronic patients in their own homes or in institutions, who works under the direction of a licensed physician or a registered professional nurse and who is prepared to give household assistance when necessary.

Both the American Nurses' Association and the American Hospital Association had been advocating short courses of training in nursing to women not eligible for the full course. It is known that from about 1880 there were attempts at training practical nurses or attendants. In this century there have been a few excellent schools giving short courses in nursing. Two of the pioneers are the Ballard School, New York, and the Household Nursing Association, Boston, which have given teaching in cooking, care of the house, diet theory, simple science classes and hospital experience in the simpler nursing procedures.

For over forty years there have been *correspondence* schools of nursing, and their "graduates" have numbered thousands. Attempts to close them have not been completely successful.

In 1941 an organization was formed of those engaged in training practical nurses, the *National Association for Practical Nurse Education,* which includes professional nurses and lay persons.

In 1949 the *National Federation of Licensed Practical Nurses* was formed to foster high standards of practical nursing and to promote the welfare of the practical nurse to the end that the public will be served with the highest possible care. The State Board Test Pool provide examinations for practical nurses.

PROGRAMS FOR MEN NURSES

For many years certain hospitals accepted men in programs, though most of them gave the men a shorter course. The men were frequently not called "nurses," but "attendants."

In 1888, at Bellevue Hospital in New York, the Mills School was established with a two-year course; its graduates were called attendants, following the custom of the time. Bellevue has for a long time given a full course, so that its graduates are registered nurses. Frederick Jones, director of the school from 1921 to 1929, not only developed this school, but did much to promote the preparation of men nurses.

Other early schools were at Grace Hospital, Detroit, and Battle Creek Sanitarium, Mich.; Boston City Hospital, Carney and St. Margaret's Hospital, Boston; St. Joseph's Hospital and the Pennsylvania Hospital in Philadelphia; the Alexian Brothers in Chicago and St. Louis.

In 1943 there were four schools of nursing for men only: the Mills School, New York, the Pennsylvania Hospital School of Nursing for Men and the two Alexian Brothers' hospitals in Chicago and St. Louis. Now many more men are interested in nursing. Since 1948 the number of men student nurses has doubled.

We are beginning to consider the welfare of the man *patient* in a general hospital and to realize that in the great number of hospitals that have no men nurses, most patients with urological, venereal, and some surgical conditions are cared for largely by untrained orderlies. The employment of male nurses would give men patients the same grade of care that women patients receive.

RECENT DEVELOPMENTS

In 1946, the *Hospital Survey and Construction Act,* also called the Hill-Burton Bill, was signed by the President. This provided a five year federal grant-in-aid program to the states for the purpose of surveying needs, planning and constructing necessary hospitals and health centers. The Federal government paid one third of the cost for the survey and construction; the other two thirds were assumed by the individual state.

This was a challenging opportunity for nurses to be consulted and to make sugges-

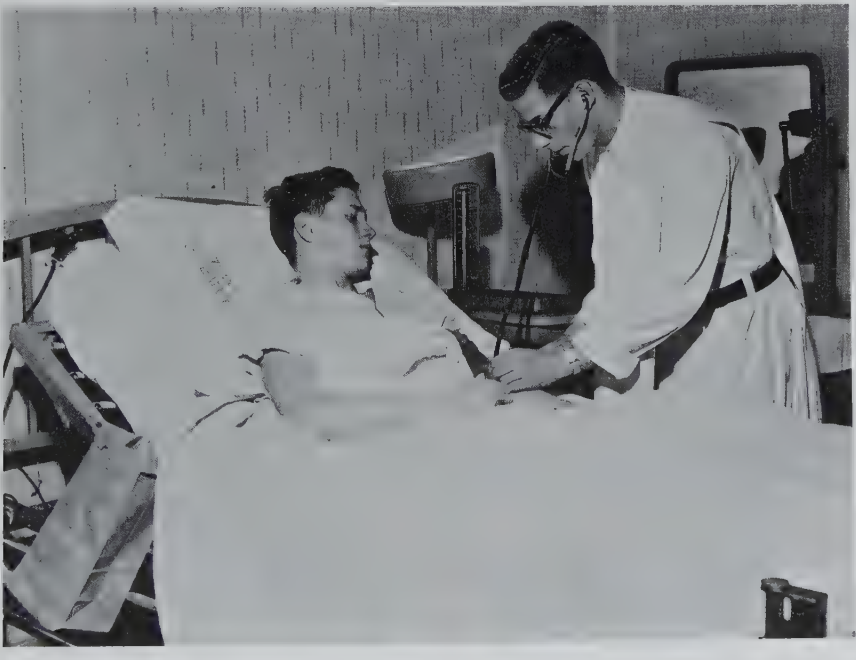

Figure 284. An Alexian brother taking the blood pressure of one of his patients. (Courtesy of Alexian Brothers.)

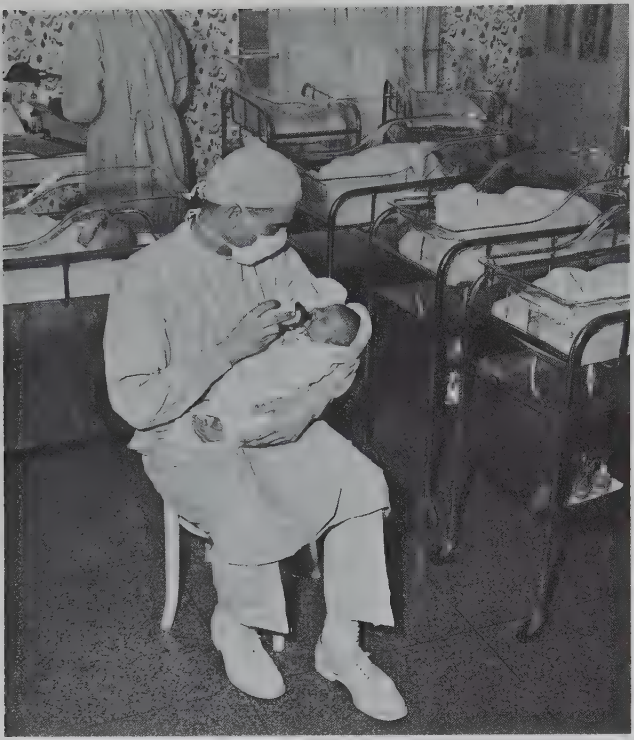

Figure 285. The nursery in Pennsylvania Hospital, Philadelphia, Pa. (Courtesy of Public Health Service, U. S. Department of Health, Education and Welfare.)

tions for the planning of work areas in which they would carry out their duties. This was stressed by Louise Waagen,[4] Chief of the Hospital Nursing Section, Division of Hospital Facilities of the United States Public Health Service.

The search for better methods of doing things, for labor-saving and step-saving devices, for the application of the principles of work simplification had long since been utilized in agriculture, industry and the home. Yet, while nursing assumed new functions, it still clung to old methods, and nurses worked frequently in antiquated work areas, walking miles and carrying heavy things.

In 1947, a book was published entitled *Nursing in Modern Society*[5] which made the members of the nursing profession aware of their present role and which set the stage for a period of critical analysis of nursing and of nursing education. The foreword to this erudite work states that the book "constitutes a natural introduction . . . for it presents an enveloping concept of the true place of nursing today in the social background of which it is a part."[6]

Miss Chayer stressed that: "A revolution is needed in nursing today. One is being experienced whether it is being recognized or not. Our time-honored methods of serving the public are no longer adequate."[7] She continued: "Any institution that has permanence centers its activities around fundamental human needs."[8]

Miss Chayer further indicated that as times change and new knowledge was assembled, new techniques and skills should be developed to satisfy these needs. "What was good enough, or at least tolerated at one stage of development, is not good enough for another. The 'horse and buggy age' gives place to the 'atomic age,' with its new responsibilities and dangers."[9]

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[4] Waagen, Louise: The Hospital Survey and Construction Act. *American Journal of Nursing, 48:*361–363, 1948.

[5] Chayer, Mary Ella: *Nursing in Modern Society.* New York, G. P. Putnam's Sons, 1947.

[6] *Ibid.,* p. vii.

[7] *Ibid.,* p. xi.

[8] *Ibid.,* p. xii.

The present problem is then crystallized:

> Never before in our history have so many persons been the recipients of so many hours of nursing care; yet even now only a small fraction of the people most in need of nursing care are receiving its benefits. What are the social forces that have increased the demand for nursing services at a time when death rates are lower, fewer people are acutely ill, the duration of illness has been lessened, and the duration of bed care shortened? . . . Whatever the causes . . . the problem is ours as a professional group to solve, with the inestimable help . . . of the consumers of nursing service.[10]

Help was coming; after twenty-five years, nursing was again to be surveyed. The *National Nursing Council for War Service* was organized in 1942 as a coordinating council for the fourteen national organizations concerned with nursing. This Council's achievements were remarkable, and at the end of the war it continued as the *National Nursing Council,* for the purpose of sponsoring three studies: a history of its own accomplishments, presented in *The History of the National Nursing Council* by Hope Newell; an economic survey of the nursing profession compiled and distributed by the Bureau of Labor Statistics of the United States Department of Labor; and a *study of nursing education.* The National Nursing Council felt that the deficiencies in nursing service in quantity and quality resulted from the prevailing system of nurse education.

NURSING EDUCATION

A financial grant was obtained from the Carnegie Foundation, and *Esther Lucile Brown,* Director of the Department of Studies in the Professions at Russell Sage Foundation, was appointed to carry out the study of nurse education. Miss Brown was well prepared to conduct the survey, since she had conducted studies and published findings on the role of education in the essential professions of social work, engineering, medicine and law and how this education could be molded to meet the needs of society.

Figure 286. Esther Lucile Brown. (Courtesy of *American Journal of Nursing.*)

The problem for the study of nurse education revolved around the question: "How should a basic professional school of nursing be organized, administered, controlled and financed to prepare its graduates to meet community needs?"

It was essential to consider the function of the nurse and her place in society before recommendations could be made for her preparation. Three subproblems were set up:

1. What will be the probable nature of health services during the second half of the twentieth century and what nursing

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[9] *Loc. cit.*

[10] *Ibid.,* pp. xii–xiii.

services will meet the needs of society most adequately?

2. What kind of education and training will prepare nurses most effectively to render these services?

3. How should this education be organized, controlled and financed?

Miss Brown visited about fifty schools and held three regional conferences[11] of nursing leaders in San Francisco, Chicago, and Washington, D.C. Her findings were interpreted and discussed, and in 1948 recommendations were published in *Nursing for the Future*. These twenty-eight recommendations could be briefly summarized as follows:

Need for nurses to study and analyze nursing functions.

Need for nursing functions to be carried out by nursing service teams.

Need for clarification of the use of the term "professional," which should be used as the term is understood by educators.[12]

Need for university schools of nursing to be autonomous, improve their programs, obtain a better prepared faculty, seek the best available clinical facilities, and have contracts between the degree-granting institution and the clinical agency stating the privileges and obligations of both the institution and the agency and including a statement concerning the use of the students' time exclusively for purposes of education.

Need for positive steps to be taken by the nursing profession to create an atmosphere which attracts a carefully selected segment of the population.

Need for provisions to be made within the university for distinguished hospital schools of nursing.

Need for experimentation in shortening the course in other hospital schools and at the same time making provisions for enriching their course of study. (A vast number of schools conducted by hospitals offer, in spite of improvements, apprenticeship training.[13])

Need to consider the use of psychiatric hospitals as agencies for affiliation in psychiatric nursing, rather than have these institutions conduct their own schools.

Need to conduct a periodic examination of schools, to publish and distribute lists of accredited schools and to plan for periodic reexamination of schools.

Need for the public to assume greater financial responsibility for nursing education.

Need to provide a more substantial academic preparation for leadership in nursing education and in clinical nursing specialties.

Need for improved programs in the educational preparation of the graduate nurse.

Need for a study to plan for the distribution of schools on local and regional bases to serve the needs of the entire country.

Need to improve in-service education and to achieve better interpersonal relationships within the hospital.

Need for better interprofessional team relationships in more congenial hospital atmospheres.

Need to increase the use of trained practical nurses, to improve their educational preparation and enact sound legislation to safeguard their practice.

Need for the greater use of men as

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[11] An account of these conferences may be found in *A Thousand Think Together*. New York, National Nursing Council, 1948.

[12] Careful consideration should be given to the fact that professional schools in most other fields have already come within degree-conferring institutions to such an extent that possession of a degree is fast becoming a criterion of a person's having received professional as contrasted with vocational training." Brown, Esther L.: *Nursing for the Future*. New York, The Russell Sage Foundation, 1948, p. 77.

[13] *Ibid.*, p. 48.

nurses and for the employment of married nurses.

Need for hospitals to assume a positive health function in the community and to have an increased awareness of the importance of the social and emotional factors involved in illness.

This study, or *Brown Report* as it has been called, presented findings which challenged action in securing these long-range goals. The necessity of being aware of the needs of society in the second half of the twentieth century and the preparation of nurses to meet these needs was emphasized. The Brown report quotes from the proceedings of a workshop organized by the National Nursing Council, which defines the place of the future professional nurse in her field of nursing and in our larger society:

> It is the opinion of this group that in the latter half of the twentieth century, the professional nurse will be one who recognizes and understands the fundamental (health) needs of a person, sick or well, and who knows how these needs can best be met. She will possess a body of scientific nursing knowledge which is based upon and keeps pace with general scientific advancement, and she will be able to apply this knowledge in meeting the nursing needs of a person and a community. She must possess that kind of discriminative judgment which will enable her to recognize those activities which fall within the area of professional nursing and those activities which have been identified with the fields of other professional or nonprofessional groups.
>
> She must be able to exert leadership in at least four different ways: (1) in making her unique contribution to the preventive and remedial aspects of illness; (2) in improving those nursing skills already in existence and developing new nursing skills; (3) in teaching and supervising other nurses and auxiliary workers; and (4) in cooperating with other professions in planning for positive health on community, state, national, and international levels.[14]

In defining nursing itself, the Brown Report quoted Sister M. Olivia of the Catholic University of America:

Figure 287. Sister M. Olivia Gowan, Dean Emeritus, School of Nursing, Catholic University of America, Washington, D. C.

> Nursing in its broadest sense may be defined as an art and a science which involves the whole patient—body, mind, and spirit; promotes his spiritual, mental and physical health by teaching and by example; stresses health education and health preservation, as well as ministration to the sick; involves the care of the patient's environment—social and spiritual as well as physical; and gives health service to the family and community as well as to the individual.[15]

The function of the professional nurse, and that of professional nursing, has been more than just the carrying out of treatments and the assistance of members of other professions. This function should be, on the other hand, that of *assisting patients.* It was gratifying to know that Miss Brown was impressed by the universal desire of nurses to nurse: "Nurses both want and like"[16] to care for patients. She also noted that a challenging opportunity was not satisfied because nurses were involved with non-nursing activities in archaic, energy-depleting hospital units.

With the publication of the Brown Report in 1948, the National Nursing Council, having achieved its last objective, dissolved.

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[14] *Ibid.,* p. 73.

[15] *Ibid.,* p. 74.

[16] *Ibid.,* p. 53.

While the Brown Report was being made another study was being analyzed by the *Committee on the Function of Nursing* appointed by the Division of Nursing Education of the Teachers College, Columbia University. The aim of this committee was to review "a selected group of problems centering around the current and prospective shortages of nursing personnel."[17] The results of the discussion of this group were published in a thought-provoking and worth-while book entitled *A Program for the Nursing Profession.*

The proposals of this committee, which were summarized briefly at the end of the book,[18] were that:

a. The nursing function be subdivided among two groups of personnel—professional and practical nurses.
b. Relations be clarified and improved between the nurse and the other members of the medical and health team.
c. Suitable relations be developed among the various groups of nursing personnel who together comprise the nursing team.
d. The professional nurse complete a four-year course in a college or university affiliated school of nursing.
e. The practical nurse be graduated from a 9 to 12 month program in an approved school for practical nursing.
f. A goal of approximately 200,000 professional nurses for 1960 be established.
g. A goal of approximately 400,000 practical nurses for 1960 be established.
h. Conditions of pay and work in nursing be substantially improved and differentials in reward be instituted.
i. Research receive a heightened emphasis.

It was interesting that these recommendations in the main parallel those of the Brown Report.

The national nursing organizations formed a *Committee on Implementing the Brown Report,* with representatives from allied professional groups. The committee was eventually called the *National Committee for the Improvement of Nursing Services.* One of the important projects sponsored by this group was the *School Data Analysis:* by means of a questionnaire, a report of the practices in schools of nursing in 1949 was procured.

The schools cooperated wholeheartedly and 97 per cent responded. The data were analyzed and the schools were classified against other participating schools, rather than against other criteria.[19] In November of 1949, the classification of schools appeared in the *American Journal of Nursing* under the heading "Interim Classification of Schools of Nursing Offering Basic Programs."

The Interim Classification was published again in *Nursing Schools at the Mid-Century,*[20] together with a complete analysis of the data presented in an informative graphic manner.

The members of the nursing profession, realizing that in unity there was strength, began studying the possibility of substituting one or two organizations for the six already existing ones. The possibility of reorganizing for the greater unified action of a more effective professional association was realized in 1950 when the proposal for the *American Nurses' Association* (A.N.A.) and the *National League for Nursing* (N.L.N.) was endorsed. The change was completed in 1952.

At the biennial convention of 1952, another milestone was reached when the students of nursing voted to form a *National Student Nurse Association* under the sponsorship of the Coordinating Council of the American Nurses' Association and the National League for Nursing. This associa-

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[17] The Committee on the Function of Nursing: *A Program for the Nursing Profession.* New York, The Macmillan Co., 1948, p. ix.

[18] *Ibid.,* pp. 105–106.

[19] Diploma and degree programs were graded separately.

[20] National Committee for the Improvement of Nursing Services: *Nursing Schools at the Mid-Century.* New York, Osmond-Johnson, 1950.

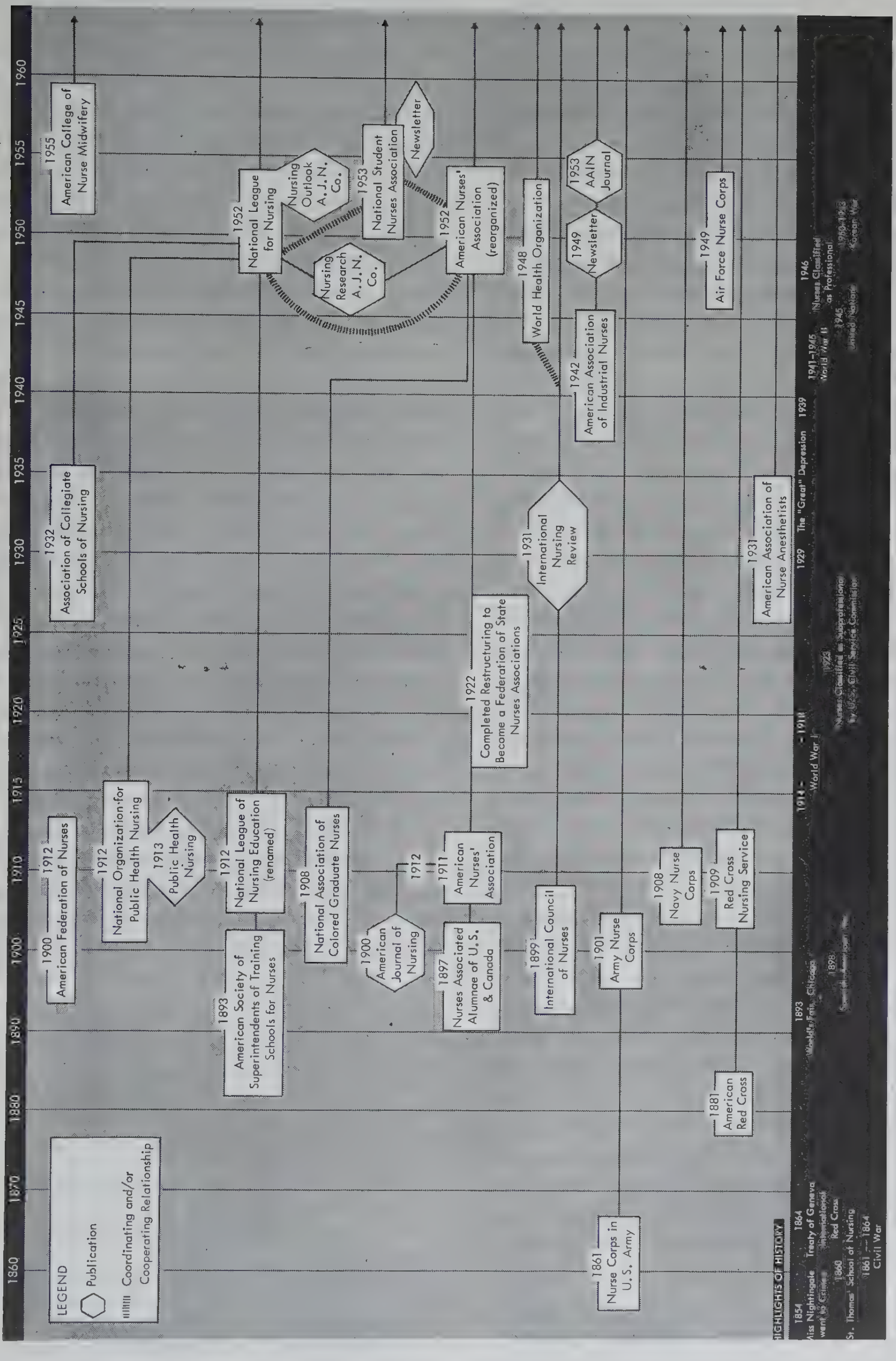
THE GROWTH AND DEVELOPMENT OF NURSING ORGANIZATIONS IN THE UNITED STATES
1860
1870
1880
1890
1900
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
LEGEND
Publication
Coordinating and/or Cooperating Relationship
1861 Nurse Corps in U.S. Army
1881 American Red Cross
1893 American Society of Superintendents of Training Schools for Nurses
1900 American Federation of Nurses
1912
1912 National Organization for Public Health Nursing
1913 Public Health Nursing
1912 National League of Nursing Education (renamed)
1908 National Association of Colored Graduate Nurses
1900 American Journal of Nursing
1912
1897 Nurses Associated Alumnae of U.S. & Canada
1911 American Nurses' Association
1922 Completed Restructuring to Become a Federation of State Nurses Associations
1899 International Council of Nurses
1931 International Nursing Review
1901 Army Nurse Corps
1908 Navy Nurse Corps
1909 Red Cross Nursing Service
1931 American Association of Nurse Anesthetists
1932 Association of Collegiate Schools of Nursing
1942 American Association of Industrial Nurses
1948 World Health Organization
1949 Newsletter
1953 AAIN Journal
1949 Air Force Nurse Corps
1952 National League for Nursing
Nursing Research A.J.N. Co.
Nursing Outlook A.J.N. Co.
1953 National Student Nurses Association
Newsletter
1952 American Nurses' Association (reorganized)
1955 American College of Nurse Midwifery
HIGHLIGHTS OF HISTORY
1854 Miss Nightingale went to Crimea
1864 Treaty of Geneva International Red Cross
1860 St. Thomas' School of Nursing
1861 — 1864 Civil War
1893 World's Fair, Chicago
1898
1914 — 1918 World War I
1923 Nurses Classified as Subprofessional by U.S. Civil Service Commission
1929 The "Great" Depression 1939
1941-1945 World War II
1945 United Nations
1946 Nurses Classified as Professional
1950-1953 Korean War

Figure 288. The growth and development of nursing organizations in the United States. (Courtesy of Miss Vivian Ahl and *Nursing Outlook.*)

tion is composed of students enrolled in state-approved schools of professional nursing.

It was amazing and gratifying that, in less than ten years after the completion of our so-called professional stocktaking, so many suggestions and solutions for our problems were imminent.

A step forward was taken by the nursing profession when its members requested a study of all phases of nursing care. This request was approved by the House of Delegates at the 1950 Convention, and it endorsed the *A.N.A. Program of Studies of Nursing Functions.* Thus was launched the five year plan for research in nursing which was financially supported from voluntary membership contributions. The earnest wish of all nurses seemed to be that nursing continue to be an important link in the chain of total health care.

In assuming its professional responsibility of undertaking research in nursing functions, the A.N.A. had a threefold purpose:

1. To determine the functions and relationships of institutional nursing personnel of all types—professional nurses, practical nurses and auxiliary workers—in order to improve nursing care and to utilize nursing personnel most economically and effectively.

2. To determine what proportion of nursing time should be provided by each group in various situations.

3 To develop techniques for achieving the first two statements of purpose which can be applied to all types of hospitals, and so obtain a national picture.

Studies have been made during a six year period. Clara A. Hardin, Associate Executive Secretary of the American Nurses' Association, was appointed Director of the Research and Statistics Unit, and at the 1956 American Nurses' Association convention the preliminary report, *Nurses Invest in Patient Care,* was released.

The American Nurses' Association also stimulated the study of functions, standards and qualifications (F. S. & Q.)[21] for the practice of nursing. Such statements are invaluable guides[22] for those who are planning curricula for future practitioners, those who are constructing job specifications and qualifications, those who are struggling to construct an acceptable definition for nursing, those who are trying to explain our profession to the general public and even those who are striving to defend an acceptable standard of conduct in nursing to lawyers and to courts.

In contemplating the study of the functions and standards of nursing care, the area of nursing service was scrutinized. Many studies have been made and are still being carried out in this area. Notable among these has been the investigation done by Leo Simmons[23] at the New York Hospital on interpersonal relations and their effect on patient recovery. Another point of interest was in determining how many non-nursing tasks were being carried out by nurses. The Division of Nursing Resources of the United States Public Health Service conducted a study in this at the Massachusetts General Hospital.[24]

Another study in this category was an investigation into the misuse of professional nursing personnel, with suggestions for using this personnel more effectively to achieve greater satisfaction. This project was carried out at Harper Hospital in Detroit,[25] and the emphasis seemed to be that nursing be given back to nurses.

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[21] American Nurses' Association statements of functions, standards and qualifications. *American Journal of Nursing, 56:*898, 1027, 1165, 1305, 1586, 1956.

[22] McIver, Pearl, and Anderson, Bernice: Functions, standards and qualifications. *American Journal of Nursing, 57:*748–750, 1957.

[23] Simmons, Leo W.: *Studies in the Application of Social Science in Medicine and Nursing at New York Hospital—Cornell Medical Center.* New York, Russell Sage Foundation, 1950.

[24] Olson, Appollinia F., and Tibbitts, Helen G.: *A Study of Head Nurse Functions in a General Hospital.* Public Health Monograph, No. 3 (P.H.S. publication, No. 107), Washington, D. C., United States Government Printing Office, 1951.

Also studied were the formations and uses of *nursing teams,* including the development of the philosophy of team work, the methods of planning for and the acceptance of this philosophy and, finally, implementing these principles in practice.[26]

The educational preparation of the practitioner also received attention and two books presented the studies in two areas: university preparation,[27] and the preparation of *nursing technicians.*[28] The latter was a description of an experimental program established to educate and prepare a group to function at a level beyond that of the practical nurse and be certificated as semiprofessional. This program has been under the aegis of a junior college and lasts two years. The graduate of this program can assume the intermediate range of functions, from the simple ones carried out by the aide to the complex ones assumed by the professional nurse only.

Experimental programs on a two year basis had been appearing for some time. These programs stressed the value of educational control in an education-centered agency rather than a service-centered agency. Not just time, but *better educational use of time* was needed; thus a shortened program might result. Indeed, in 1946, the Canadian Red Cross Society made a financial grant to the Canadian Nurses' Association to establish the Metropolitan School of Nursing.[29] This program was financially and administratively independent of any hospital, and lasted two years. Enrichment of the learning experiences for the student was paramount.

The need for a single professional nursing accrediting agency was finally realized in January 1949 when the joint boards of directors of the six national nursing organizations merged to form the *N.N.A.S.*, the *National Nursing Accrediting Service.* Since its inception this group has carried on the important function of visiting, evaluating and accrediting schools of nursing. The accrediting service has also carried out a program of guidance to the faculties of schools of nursing by conducting workshops and conferences. It now publishes lists of accredited schools for the public, for prospective students of nursing and for guidance counsellors in high schools.

Accreditation has not been an end in itself but has been a means of stimulating schools to improve their programs.

Legislation on local and federal planes was enacted to encourage students to enter schools of nursing, and to prepare all nursing personnel—faculty members and nursing service staff members—to become better prepared in their particular area of specialization. On the local level, many states[30] have passed bills for scholarship aid for nurses.

The most gratifying legislative accomplishment was the passage of the *Health Amendments Act* in 1956 which provided for nurses to obtain advanced preparation for positions in administration, supervision and teaching and in traineeships for public health personnel. It provided also for financial support in the expansion and improvement of practical nurse programs in the states, under the direction of vocational education. The success of this program in encouraging more academic preparation for leadership has been apparent.[31]

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[25] Wright, Marion J.: *The Improvement of Patient Care.* New York, G. P. Putnam's Sons, 1954.

[26] Newcomb, Dorothy P.: *The Team Plan.* New York, G. P. Putnam's Sons, 1954.

[27] Bridgman, Margaret: *Collegiate Education for Nursing.* New York, Russell Sage Foundation, 1953.

[28] Montag, Mildred: *The Education of Nursing Technicians.* New York, G. P. Putnam's Sons, 1951.

[29] Fidler, Nettie: The Metropolitan School of Nursing. *American Journal of Nursing, 51:*51, 1951.

[30] Connecticut's scholarship aid program. *American Journal of Nursing, 54:*200–202, 1954.

On August 9, 1955, President Eisenhower signed the *Bolton Amendment* to the Army–Navy Nurses Act of 1947. This has made it possible for qualified men nurses to become commissioned officers in the Army Nurse Corps Reserve.[32]

In 1953, the first patients were admitted to the Clinical Center for Medical Research at Bethesda, Maryland. In this center, scientific research projects are conducted in many areas of medicine and nursing. This research center operates under the administration of the Department of Health, Education and Welfare and is one of the sections of the national Institutes of Health of the United States Public Health Service. This offers a challenging opportunity for the well prepared professional nurse who is research minded.[33]

Margaret Arnstein, who has been in charge of the Division of Nursing Resources of the United States Public Health Service, has become the new chief of public health nursing.

INTERNATIONAL RELATIONS

With the inception of the Nursing Section of the World Health Organization in 1949, *Olive Baggallay* was appointed chief and continued in this office until 1954. Miss Baggallay graduated from St. Thomas' in London and had been secretary of the Florence Nightingale International Foundation from 1934 to 1949. She had served also as chief nurse consultant for UNRRA in Greece. Her contributions to the welfare of mankind have been manifold.

In July, 1954, *Lyle Creelman,* a graduate of Vancouver, Canada General, having received a B.S. degree from the University of British Columbia and a M.A. degree from Teachers College, Columbia University, became chief of the Nursing Section of the World Health Organization. She had been public health nursing administrator in the Nursing Section of W.H.O. since 1949. Her guidance and counsel had been extended in the area of public health nursing to all throughout the world. Miss Creelman had just completed a study on public health practice in Canada prior to her new assignment.

Mention has been made of heroes and and heroines in the care of sick whose valor and devotion under difficult circumstances have merited world-wide acclaim. Such opportunities present themselves daily for the nurse, even though she does not receive international tribute. The world is ready to cheer, however, when the spotlight does fix itself on such a heroine.

In March of 1954 a newly graduated French nurse, *Genevieve de Galard Terraube,* wrote a letter to her mother, the Vicomtesse de Galard Terraube, in Paris: "There is no reason why anything should happen to me . . . but I am about to leave for Dienbienphu. I am sure God will protect me, and the poor soldiers who are waiting to be evacuated surely deserve that every effort should be made to get them out."[34] Thus a nurse prepared to "go on duty," even though duty meant Indo-China by helicopter.

The following morning at about 3 A.M. this French Air Force nurse landed at the besieged fortress. Before her plane was ready to leave the area again, the Communist-led Vietminh fire crippled it, thus

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[31] Jenney, Mary O., and Wehrwein, Annabel: Federal traineeships—the first year. *American Journal of Nursing, 57:*726–728, 1957.

[32] Men nurses were not eligible, under the present law, for a commission in the regular Army Nurse Corps.

[33] Johnson, Ruth L., Dilworth, Ava S., and Fagin, Claire M.: Nursing in a clinical center for medical research. *American Journal of Nursing, 53:*1329–1332, 1953.

Figure 289. Miss Lyle Creelman, who succeeded Miss Olive Baggallay as Chief of the Nursing Section of the World Health Organization in July, 1954.

providing Genevieve de Galard Terraube with an opportunity for additional heroism. The only woman at the fortress, this "Angel of Dienbienphu" nursed the wounded soldiers for forty-one days and after the fortress fell on May 7, she continued her efforts although a prisoner of war. For her devoted care in a dugout under fire, Genevieve de Galard Terraube received from General de Castries the medal of the Legion of Honor and later the Military Cross as a mark of gratitude from France. She later was awarded the Bronze Medal of Freedom from the United States Government by President Eisenhower.

In answer to a letter of tribute sent to the French Nurses' Association from the American Nurses' Association, Mlle. de Galard Terraube wrote:

> The kind thoughts of the American nurses have touched me deeply, and I ask you to extend my sincere thanks to them. I am very grateful for the fact that, without knowing me, so many of them were with me in spirit during those difficult days.
>
> I feel certain that anyone placed in my position would have done the same, but I am happy that this occasion has proved the solidarity and closeness of nurses all over the world.[35]

The nursing profession might well be proud of Mlle. de Galard Terraube, for because of her willingness and ability to care for the needy she won a tribute of honor

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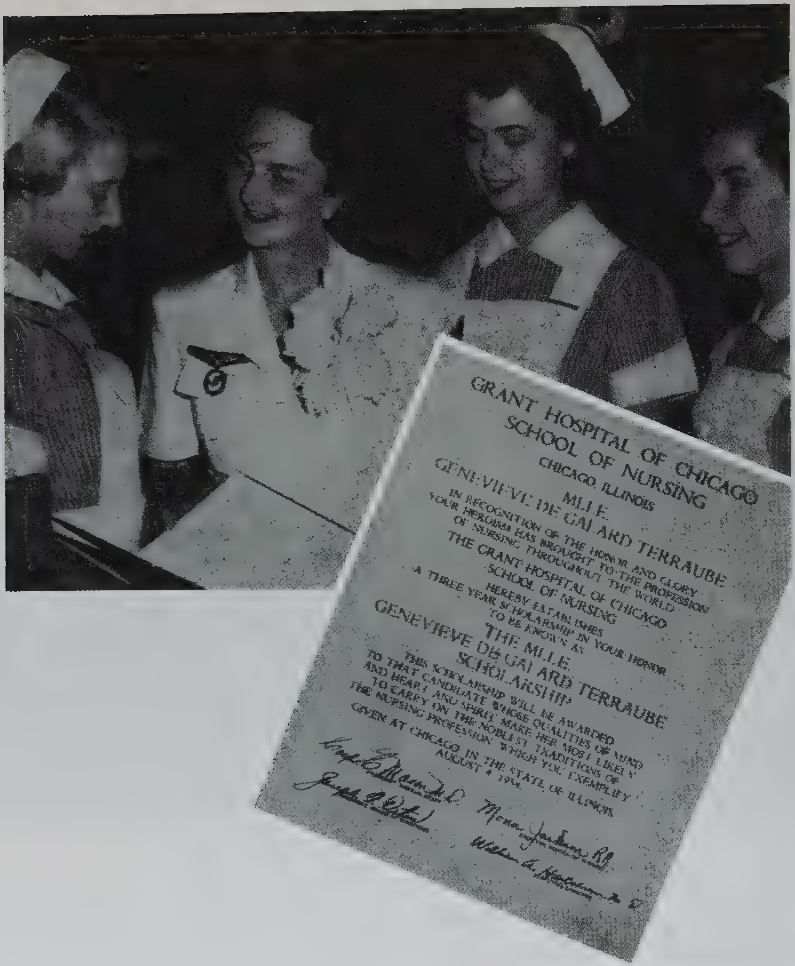
[34] *Time,* May 31, 1954.

[35] *American Journal of Nursing, 54:*999, 1954.



GRANT HOSPITAL OF CHICAGO
SCHOOL OF NURSING
CHICAGO, ILLINOIS
MLLE.
GENEVIEVE DE GALARD TERRAUBE
IN RECOGNITION OF THE HONOR AND GLORY
YOUR HEROISM HAS BROUGHT TO THE PROFESSION
OF NURSING THROUGHOUT THE WORLD
THE GRANT HOSPITAL OF CHICAGO
SCHOOL OF NURSING
HEREBY ESTABLISHES
A THREE YEAR SCHOLARSHIP IN YOUR HONOR
TO BE KNOWN AS
THE MLLE.
GENEVIEVE DE GALARD TERRAUBE
SCHOLARSHIP
THIS SCHOLARSHIP WILL BE AWARDED
TO THAT CANDIDATE WHOSE QUALITIES OF MIND
AND HEART AND SPIRIT MAKE HER MOST LIKELY
TO CARRY ON THE NOBLEST TRADITIONS OF
THE NURSING PROFESSION WHICH YOU EXEMPLIFY
GIVEN AT CHICAGO IN THE STATE OF ILLINOIS
AUGUST 4 1954

Mona Jackson R.N.

Figure 290. Students of the Grant Hospital School of Nursing in Chicago presented to Mlle. Genevieve de Galard Terraube a scroll describing the establishment of a scholarship in her honor. "In recognition of the honor and glory your heroism has brought to the profession of nursing throughout the world . . . this scholarship will be awarded to that candidate whose qualities of mind and heart and spirit make her most likely to carry on the noblest traditions of the nursing profession which you exemplify."

for all nurses. Because of her devotion to duty and her courage when it often appeared doubtful that any of the garrison would live through the battle, this daring French nurse carved for herself a permanent place in the history of the world's heroic women.

Because of better and more efficient means of communication, the interchange of students between countries has resulted in a greater sharing of nursing knowledge.

There has been an increased awareness of the role of the nurse as a citizen. This is obvious when we see that a dean of a university school is a noted lawyer, a well known international nurse leader is one of five nurses from her country who have become members of Parliament, and the chairman of the committee on foreign relations of one country is a nurse. Their example should inspire nurses not to isolate themselves as functioning members of a profession but be prepared to accept roles as world citizens.

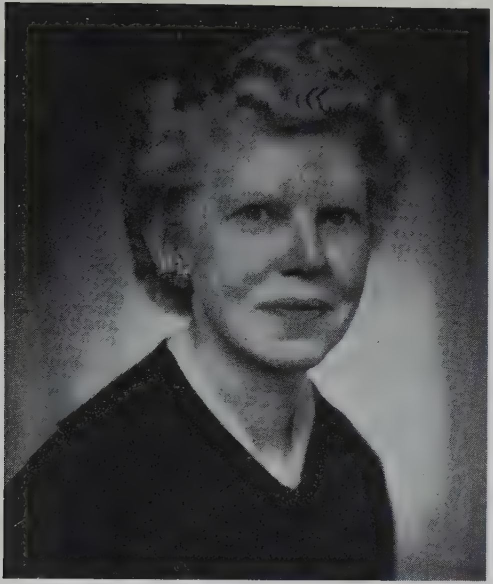


Figure 291. Miss Agnes Ohlson, former President of the American Nurses' Association and Vice-President of the International Council of Nurses. (Pach Bros., N. Y.)

SELF-EVALUATION

On May 4, 1960, at the forty-second convention of the American Nurses' Association held in Miami Beach, Florida, the delegates voted to accept from the Committee on Current and Long Term Goals a report which was to become the basis for continued discussion in the states. Included in this report was a section referred to as Goal Three which stated:

> To insure that, within the next twenty to thirty years, the education basic to the professional practice of nursing for those who then enter the profession shall be secured in a program that provides the intellectual, technical and cultural components of both a professional and liberal education. Toward this end, the ANA shall promote the baccalaureate program so that in due course it becomes the basic educational foundation for professional nursing.

Many states have appointed committees to study the progress of nursing and nursing education in each state as we emerge into the latter period of the twentieth century.

In the clinical setting at the turn of this century, the patient, the students of nursing, the director of nursing, and, of course, the patient's physician were the members of the team. Many members of other professions have joined the health team. They, too, have gone through the evolutionary process towards professional status. The problems have been comparable, and they are still comparable. It is through the united efforts of all that problems are identified, analyzed, and solved. Thus, is history written.

INTERNATIONAL VENTURE—PROJECT HOPE

A floating medical center sailed in 1960 on a one year's journey to southeast Asia, to Indonesia and South Vietnam, to attempt a personal approach to bring about a healthier, happier and probably a more peaceful world. The medical center is situated on a renovated, rechristened former naval hospital ship now called the S.S. *Hope.* The *Hope* signifies *Health Opportunities for People Everywhere* and reflects the desire of professional persons to share their knowledge in a person to person relationship. The director who brought this project to fruition was Dr. William B. Walsh, a Washington, D.C., physician.

The staff of this 800-bed medical center has consisted of 15 fulltime physicians, 2 dentists, 22 registered professional nurses and about 20 other medical personnel. Additional physicians and surgeons were flown to the ship on a short-term basis. The latest medical equipment and teaching facilities were installed on the ship including closed circuit color television for enrichment of teaching. The American doctors and nurses shared their latest information, new techniques and methods of treatment while their Indonesian counter-

STATUS OF CRAFT *STATUS OF PROFESSION*

Steps → Trial and error → Apprenticeship → Proprietary school → Specialized school in a university

	THEN			*NOW*		
				Length of Course	Degree required	Spec. degree
Dietitian	→ no special preparation ability in cooking	apprentice	proprietary school	4 yrs. in accred. sch. + 1 yr. intern.	Bacc.	
Medical Technician	→ no preparation	→ 12 to 18 mos. course in hospital (no degree)		3 yrs. in accred. sch. + 1 yr. intern.	Bacc.	
Pharmacist	→ no preparation	→ apprentice in drug store	→ proprietary school	5 yrs.	Bacc.	
Physician	→ no pre-medical preparation medical school (few mos.) no earned degree	→ h.s. required (1914)	→ coll. req. 1 to 2 yrs. (1916)(1918)	4 yrs. pre-med. 4 yrs. med. 1 yr. intern ? yrs. residence	Bacc.	M.D.
Physical Therapist	→ no preparation	→ apprentice	→ proprietary school	4 yrs.	Bacc.	
Social Worker	→ no preparation	→ apprentice	→ proprietary school	4 yrs. + 2 yrs.	Bacc.	MSS
Teacher	→ no preparation	→ 2 yrs. to 3 yrs. normal school (no degree)		4 yrs. Tea. Coll. or Sch. of Ed.	Bacc.	Master's desirable
Nurse	→ no preparation	→ apprentice	→ 1, 2, or 3 yr. in hosp.	3–4–5–6–7–yrs.+		

Figure 292. Steps in the evolutionary process toward professional status.

parts explained diseases unfamiliar to Americans and displayed cases to support this information, mainly tropical diseases. By working together as well as playing together much was done to gain the trust and friendship of these newly developing countries.

One of the amazing aspects of this medical center was the machine that processed 3000 gallons of milk a day from ocean water. The milk was accepted eagerly.

Two hundred Indonesian doctors and 300 Indonesian nurses participated in this project. It has been reported that almost 30,000 persons in both countries received treatment and in Vietnam the first mass innoculation program for children in the history of that country was carried out.

In 1962 the S.S. *Hope* left for another year's mercy mission to Peru. This project has been an excellent example of man's humanity to man.

PEACE CORPS

In his Inaugural Address on January 20, 1961, President John F. Kennedy said: "Ask not what your country can do for you—ask what you can do for your country." The Peace Corps has presented an opportunity for citizens to represent their country while working directly with peoples of other countries to provide economic, social, or educational assistance and to stress the cause of peace through personal sharing and the encouragement of mutual understanding.

The Peace Corps was launched on March 1, 1961, when President Kennedy issued an executive order establishing the Corps on a temporary basis. The Peace Corps is an independent agency within the State Department. Through this corps a pool of trained manpower is made available to help other countries meet pressing problems. Volunteers function as teachers, nurses, doctors, librarians, social workers, laboratory technicians, community development workers, agricultural extension workers, sanitary engineers, and in various other occupations.

The volunteer is desirous of elevating the standards of living, and of improving educational and social levels in the newly developing areas of the world. Peace Corps members go to these areas to teach, to build, to work, and to live in the communities to which they are sent. In this Corps nurses really have an opportunity to participate actively in what President Kennedy called "a long twilight struggle, . . . a struggle against the common enemies of man: tyranny, poverty, disease and war itself."

Figure 293. Lt. Dolores B. O'Hara, America's first space nurse, shares a moment of history with Miss Effie J. Taylor who is being cited for her achievements as a distinguished nurse leader. (Courtesy of Connecticut Nurses Association.)

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